

# ALASKA RETIREMENT MANAGEMENT BOARD

BOARD of TRUSTEES MEETING  
December 1 & 2, 2022  
Atwood Conference Center, Anchorage

# Board of Trustees Meeting

Thursday, December 1, 2022

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Call In (Audio Only): 1-907-202-7104

Code: 275 853 439#

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- I. 9:00 AM Call to Order
- II. Roll Call
- III. Public Meeting Notice
- IV. Approval of Agenda
- V. Public/Member Participation, Communications, and Appearances  
*(Three Minute Limit. Callers may need to press \*6 to unmute.)*
- VI. Approval of Minutes – September 15 -16, 2022
- VII. 9:15 AM Election of Officers
- VIII. 9:20 AM Trustee Reports
  - A. Chair Report, *Bob Williams*
  - B. Committee Reports
    - 1. Audit Committee, *Michael Williams, Chair*
    - 2. DC Plan Committee, *Bob Williams, Chair*
    - 3. Actuarial Committee, *Allen Hippler, Chair*
    - 4. Operations Committee, *Dennis Moen, Chair*
      - Action: IAC Contract Expiration*
      - Action: IAC Contract Solicitation*
      - Action: Updates to ARMB Policy & Procedures Manual*
    - 5. Alaska Retiree Health Plan Advisory Board, *Lorne Bretz, ARMB Member*
- IX. 9:40 AM KPMG Audit Report  
*Elizabeth Stuart, Audit Partner*  
*Melissa Beedle, Audit Manager*
- X. 9:55 AM Staff Reports
  - A. Liaison Report
    - 1. Disclosures Report
    - 2. Communication Report
    - 3. Meeting Calendars
    - 4. Contract Review & Deadlines Timeline  
*Alysia Jones, Board Liaison*
  - B. Fund Financial Presentation  
*Ryan Kauzlarich, Assistant Comptroller, Division of Treasury*  
*Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits*

**C. Retirement & Benefits Division Report**

1. Buck Consulting Invoices
2. Member Statistics
3. BEARS Project Update
4. Recordkeeping Contract Update

*Ajay Desai, Director, Division of Retirement & Benefits*

*Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits*

*Kris Humbert, Business Integration Officer, Division of Retirement & Benefits*

**D. Treasury Division Report**

*Pamela Leary, Director, Division of Treasury*

**E. CIO Report**

*Zachary Hanna, Chief Investment Officer*

**F. Legal Report**

*Ben Hofmeister, Assistant Attorney General, Department of Law*

BREAK @ 10:30 am (10 MINUTES)

**XI. 10:40 AM Presentations**

10:40 – 11:00

**A. Summary of Preliminary 2022 Valuation Results**

*David Kershner, Principal, Consulting Actuary, Buck*

*Stephen Oates, Principal, Health Actuary, Buck*

11:00 – 12:00

**B. Performance Measurement – 3<sup>rd</sup> Quarter**

*Steve Center, Senior Vice President, Callan*

*Ivan Cliff, Executive Vice President and Director of Research*

LUNCH @ 12:00 pm (75 MINUTES)

1:15 – 1:55

**C. Private Equity Annual Plan**

*Sean Howard, State Investment Officer*

*Cahal Morehouse, State Investment Officer*

1:55 – 2:35

**D. Callan Private Equity Manager Review**

*Ashley Kahn, Vice President*

BREAK @2:35 pm (5 MINUTES)

2:40 – 3:20

**E. Abbott Capital Management**

*Matthew Smith, Managing Director*

*Young Lee, Managing Director*

3:20 – 4:00

**F. Special Situations – Glendon Capital**

*Matthew Barrett, Partner*

BREAK @4:00 pm (5 MINUTES)

4:05 – 4:45

**G. Cybersecurity in the Executive Branch**

*Mark Breunig, Alaska Cyber Coordinator, Cybersecurity Infrastructure Security Agency (CISA)*

*Chris Letterman, Chief Information Security Officer, Department of Administration*

*NOTE: A blue box around presentation denotes educational session. All Times are approximate, every attempt will be made to stay on schedule; however, adjustments may be made.*

Friday, December 2, 2022

Call In (Audio Only): 1-907-202-7104

Code: 423 786 406#

9:00 – 9:40 **H. Macro Economics & Private Equity**  
*Henry McVey, Partner & Head of Global Macro, Balance Sheet, and Risk, KKR*

9:40 – 10:20 **I. Pathway Capital Management**  
*Canyon Lew, Managing Director*  
*Wyatt Geiger, Senior Vice President*

BREAK @ 10:20 am (10 MINUTES)

10:30 – 11:10 **J. Venture Capital – Battery Ventures**  
*Jesse Feldman, General Partner*  
*Karen Bommart, IR Partner*

11:10 – 11:50 **K. Buyout - GTCR**  
*Stephen Jeschke, Managing Director*

11:50 – 12:05 **L. Investment Actions**  
*Sean Howard, State Investment Officer*  
*Action: Resolution 2022-16 Private Equity Plan*  
*Action: Change in Key Person for General Consultant Contract*

XI. 12:05 PM **Unfinished Business**  
XII. **New Business**  
XIII. **Other Matters to Properly Come Before the Board**  
XIV. **Public/Member Comments**  
*(Three Minute Limit. Callers may need to press \*6 to unmute.)*  
XV. **Investment Advisory Council Comments**  
XVI. **Trustee Comments**  
XVII. **Future Agenda Items**  
XIII. 12:20 PM **Adjournment**

NOTE: A blue box around presentation denotes educational session. All Times are approximate, every attempt will be made to stay on schedule; however, adjustments may be made.

**ALASKA RETIREMENT MANAGEMENT BOARD  
BOARD OF TRUSTEES MEETING  
HYBRID/TEAMS**

**September 15 & 16, 2022  
9:00 a.m.**

**Originating at:  
Atwood Conference Center  
550 West 7<sup>th</sup> Avenue, 1<sup>st</sup> Floor  
Anchorage, Alaska 99501**

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**Trustees Present:**

Bob Williams, Chair  
Sandra Ryan  
Mike Williams  
Allen Hippler  
12:00pm)

Donald Krohn  
Dennis Moen  
Lorne Bretz  
Commissioner Deven Mitchell (left at

**Department of Revenue Staff Present:**

Zach Hanna, Chief Investment Officer  
Scott Jones, Head of Investment Operations,  
Performance & Analytics  
Ryan Kauzlarich, Assistant Comptroller  
Steve Sikes, State Investment Officer  
Chris Madsen, Administrative Operations Manager  
Cahal Morehouse, State Investment Officer  
Grant Ficek, Business Analyst  
Benjamin Garret, State Investment Officer

Pamela Leary, Director, Treasury Division  
Sam Hobbs, Accountant 5  
Michelle Prebula, Investment Officer  
Shane Carson, State Investment Officer  
Sean Howard, State Investment Officer  
Tina Martin, Accountant 4  
Hunter Rombert, Investment Data Analyst  
Alysia Jones, Board Liaison  
Victor Djajalie, State Investment Officer

**Department of Law Staff Present:**

Ben Hofmeister, Assistant Attorney General

**Department of Administration Staff Present:**

Hans Zigmund, Deputy Commissioner

**Investment Advisory Council Present:**

Dr. William W. Jennings  
Ruth Ryerson

Dr. Jerrold Mitchell

**Department of Administration, Division of Retirement & Benefits Present:**

Ajay Desai, Director  
Jim Puckett, Chief Pension Officer  
Kris Humbert, Business Integration Officer

Kevin Worley, Chief Financial Officer  
Emily Ricci, Chief Health Administrator

**BUCK:**

David Kershner, Principal, Consulting Actuary  
Tonya Manning, Practice Leader & Chief Actuary

Stephen Oates, Principal, Health Actuary

**GRS:**

Bill Detweiler, Consultant

**Callan:**

Steve Center, Senior Vice President

Ivan “Butch” Cliff, Executive Vice President, Director of Research

Jonathan Gould, Senior Vice President

Avery Robinson, Senior Vice President

**Guests/Presenters:**

George Tietjen, Managing Director & Portfolio Manager, Sentinel

Greg Macchia, Portfolio Associate, Sentinel

Jim McCandless, Managing Director, Co-CIO, Senior Portfolio Manager, UBS Farmland

Dan Murray, Executive Director, Co-CIO, FO, & Head of Asset Management, UBS Farmland

Thomas O’Shea, Head of Portfolio & Client Service Unit, UBS

Nicholas Moller, Managing Director, JP Morgan

Jeffrey Shields, Executive Director, JP Morgan

Julio Garcia, Head of Infrastructure, North America, IFM

David Altshuler, Head of Global Relationship Group, North America, IFM

Laura Champion, Director, BlackRock Institutional Client Business

Elizabeth Kurz, Lead Portfolio Manager, BlackRock U.S. Core Property Fund

Benjamin Young, Director, BlackRock Institutional Client Business

Jeffrey Maguire, Lead Portfolio Manager, UBS

Pete Gilbertie, Manager Portfolio Operations, UBS

Tom Johnson, Managing Director, Client Relationship Manager, TIR

Mark Seaman, Chief Investment Officer, TIR

Hong Fu, Managing Director, Economic Research and Analysis, TIR

Chris Mathis, Managing Director, Real Estate & Corporate Development, TIR

**Public Present:**

Tom Klaameyer, NEA Alaska President

Doug Woodby, 350 Juneau

Randall Burns, RPEA President

## PROCEEDINGS

### CALL TO ORDER

CHAIR BOB WILLIAMS called the Alaska Retirement Management Board meeting to order and asked for a roll call.

MS. JONES called the roll.

### PUBLIC MEETING NOTICE

CHAIR BOB WILLIAMS asked to confirm that the public meeting notice requirement was met.

MS. JONES replied, yes, it had.

### PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS AND APPEARANCES

CHAIR BOB WILLIAMS stated that they were at the Public/Members Participation, Communications and Appearances and reminded callers that there was a three-minute limit. He recognized Doug Woodby.

MR. WOODBY stated he was a state pension beneficiary and was with 350 Juneau, Climate Action for Alaska. He addressed two issues regarding fiduciary duty and understood that the Board and Department staff do their best to adhere to the principles of fiduciary duty. He proposed that the expectations for fiduciary duty had evolved for the simple reason of the world changing tremendously. The first issue was the FCC announced that it was developing rules to require public companies to increase disclosures related to climate risk. Those rules were an important step for protecting investors, and they are important because climate risks are significant. He requested that the Board require climate risk assessments to protect investments. He stated that the second issue was the huge increase in investments in crisis, which he explained with examples. He thanked all and asked for any questions.

CHAIR BOB WILLIAMS asked if the trustees had any questions for Mr. Woodby. He thanked Mr. Woodby, and recognized Randall Burns.

MR. BURNS stated that he was president of the Retired Public Employees of Alaska (RPEA) and that he listened in to the committee meetings. He spoke about the fiduciary responsibility to the health of the trust fund, and specifically to the health of the trust beneficiaries for which those trusts were formed. He stated that the Alaska Supreme Court in its diminishment clause recognized healthcare as a dynamic, and ever-changing field, and it has been clear that the State's duty must encompass and allow for its health plans to recognize the ongoing changes around the sciences and pharmaceutical. He went on record on behalf of the RPEA to the fact that the Division of Retirement Benefits has been working hard to ensure the health of its retirees, its beneficiaries, with changes adopted earlier this year with respect to preventive services; which ultimately save the plan money, while also improving the health of the beneficiaries. He stated that DRB is seriously considering and discussing raising the lifetime limits from \$1 million to \$2 million, in recognition of the increasing costs to healthcare and the length of time that retirees are living. For that reason, he encouraged looking at the overfunding of the health plan not as a gift, but as a benefit that allows the trust to better serve its members by continuing to allow the health plan to grow and change to meet the sciences. He thanked all.

CHAIR BOB WILLIAMS thanked Mr. Burns and asked for any questions. He then asked if there was anyone else in the room or online that would like to speak. Hearing none, he concluded the Public/Member Participation Communications and Appearances for this section of the meeting.

### **APPROVAL OF MINUTES**

CHAIR BOB WILLIAMS moved to the ARM Board Meeting minutes of June 16-17, 2022, and asked for a motion to approve the minutes.

**MOTION:** A motion to accept the minutes of June 16-27, 2022, was made by TRUSTEE RYAN; seconded by TRUSTEE MIKE WILLIAMS.

*There being no objection, the MOTION was APPROVED.*

### **STAFF REPORTS**

CHAIR BOB WILLIAMS moved to Staff Reports and recognized Alysia Jones, ARM Board liaison.

### **LIAISON REPORT**

MS. JONES noted there was one addition to the second quarter financial disclosure memorandum, from Trustee Hippler that would be added to the quarterly report following the meeting because it did not make it into the packet. No disclosure transactions required additional review or discussion. She continued that the communication memorandum listed communications directed to and sent from the Board since the last meeting in June. It was light this time with a fair amount of public records requests. She added that the 2022 and 2023 meeting calendars were included in the packet. The last item is a timeline included for trustee reference that showed contract and review deadlines from FY2023 through FY2028.

CHAIR BOB WILLIAMS thanked Ms. Jones for her report, and recognized Kevin Worley for the fund financial presentation.

### **FUND FINANCIAL PRESENTATION**

MR. KAUZLARICH stated that the financial report began on Page 23, and covered the period ending July 31<sup>st</sup> of 2022. He went through the numbers and explained that the total nonparticipant-directed plans totaled \$31.9 billion; participant-directed plans totaled \$8.4 billion; total assets were \$40.4 billion; and year-to-date income was \$1.6 billion. The plans experienced a net contribution of \$18.3 million. He continued through the numbers and concluded his report.

CHAIR BOB WILLIAMS thanked Mr. Kauzlarich, and asked if there were any questions.

MR. WORLEY reported that the big items for July were the receipt of the additional State contributions for the PERS DB pension trust of \$33.9 million; for the TRS DB pension trust, \$91 million; and then the Judicial Retirement System pension trust of \$3.2 million. He reminded all that the Division's report just showed contributions and expenditures related to the trust funds; not investment income. This is reporting activity of amounts received and amounts paid out for each of those trust funds. He continued that the June report, also included, and was a fiscal year-to-date report showing the fiscal-year activities on a cash basis. These numbers are

currently being audited by the external auditor, KPMG, and the reports would be issued mid-October.

CHAIR BOB WILLIAMS moved forward to the Retirement & Benefits Division report.

### **RETIREMENT & BENEFITS DIVISION REPORT**

MR. WORLEY began with the summary of monthly billings based on the quarter for Buck Global. He continued that, at the request of the ARM Board, the consultant, Buck, provided a quarterly breakdown of the services provided. He moved on to member statistics. This showed the membership statistics that were changed based on quarter totals for fiscal year '22. The report was for fiscal year ending June 30, 2022. He handed the presentation off to Kris Humbert and Ajay Desai.

MS. HUMBERT reported on the BEARS project. She stated that since the May 2022 update there had been changes in the project scope and cost. This was reported verbally to the Board. She continued that all of the evaluated changes were reviewed, and six of the 13 change requests included in that scope were underway. There are 11 project program modules that were fully designed. The data conversion was well underway with three of 11 modules at 100 percent mapped for data conversion; nine modules that are over 68 percent complete; and two remaining modules are over 30 percent mapped. She went through the budget and spending. With the change in scope, the adjusted implementation date of March 2024 was currently on track, on budget, and making steady, forward progress.

CHAIR BOB WILLIAMS stated that there were some updates at the June meeting that some costs had increased and there was going to be a slight delay, but all seemed to be on track. He asked if there were any changes for increased costs since that meeting.

MS. HUMBERT replied that there had not been any changes or increased costs since that meeting, and the changes discussed at that meeting were going very well. There had been excellent progress in getting those incorporated, and there should be no further impact on the schedule due to those changes, nor are there any additional changes that would impact the schedule or budget.

CHAIR BOB WILLIAMS thanked Ms. Humbert, and asked Director Desai for any comments.

MR. DESAI gave a verbal update that the project was going as smoothly as planned. He added that there was a lot of strain on the Division, especially with approximately 19 vacant positions. Staff was really creative and very overwhelmed with the project; however, they are very excited to see the new system going up and running.

CHAIR BOB WILLIAMS asked for any questions and thanked Mr. Desai. He moved to the Treasury Division Report with Director Leary.

### **TREASURY DIVISION REPORT**

MS. LEARY stated that there is an action memo in the packet, Page 75. She explained that this is the September meeting with the actual expenditures for the preceding fiscal year. The current fiscal year budget, as approved by the Legislature, and the budget proposed for the next fiscal year should be adopted by the Board, which is presented in the Alaska budget system as two

budget components: the ARM Board operations component; and the ARM Board custody and management component. She continued that the schedules on the pages following the action memo combined all of the components into one schedule for greater detail and to give a better understanding of what the expenses were. She explained that all costs were allocated to individual funds based on the federally approved cost allocation plan. It had been a topic of conversation during last year's Audit Committee meetings and included providing responses to questions from the former Chair that CFO Worley and she responded to. She had tried implementing within Treasury the concept of continual improvements and efficiencies, and had made a number of changes over the years. One of the cost allocation incremental changes rolled up into discussions about the budget with the Legislature, and a misconception arose leaving some to believe that a forward improvement indicated that certain funds were inappropriately changed historically. She emphasized that the current methodology for allocating costs was based on appropriate data and assumptions, and results from having more and better information over the years. She explained the management fees and continued to the action memo. She stated that the recommendation would be that the Alaska Retirement Management Board adopt the fiscal year '24 proposed budget that was attached, with the understanding that components would be subject to appropriation by OMB and the Legislature.

CHAIR BOB WILLIAMS stated that there were a couple items where there was a pretty big difference between what was in the past and what was in this budget. One of them was building-related expenses, and he asked Ms. Leary to speak to that.

MS. LEARY replied that there was a set amount of authorization, and we have authorization for the budget process in four categories. The big one is Services, which included a lot of different things. She explained the authorization more fully.

CHAIR BOB WILLIAMS asked if someone would make the motion.

**MOTION:** A motion that the Alaska Retirement Management Board adopt FY2024 proposed budget, as attached, with the understanding that the components would be subject to appropriation by OMB and the Legislature, was made by TRUSTEE MOEN; seconded by TRUSTEE KROHN.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Hippler, yes; Trustee Krohn, yes; Commissioner Mitchell, yes; Trustee Moen, yes; Trustee Ryan, yes; Trustee Mike Williams, yes; Trustee Bretz, yes; Chair Bob Williams, yes.)*

MS. LEARY continued that two of the investment staff were retiring: Michelle Prebula had served as manager of external publicity and participant-directed plans; and James McKnight, the senior compliance officer. The committee was also informed that Stephanie Pham, currently in Equity, would be taking over Ms. Prebula's role; and the compliance group was reorganized into the Middle Office under Scott Jones. She explained that the movement of the compliance group would allow the two-person group to have greater support and to modernize its processes, be more efficient, and expand its focus. She publicly acknowledged the significant contributions both Ms. Prebula and Mr. McKnight had made to the State, thanked them for their service, and wished them well in their retirements. She continued that two support staff were hired in accounting and administration, filling some vacancies mentioned in prior meetings. An investment officer was hired, but we did lose an investment officer to an opportunity outside of

Alaska. She talked about looking for additional ways to support staff and assured the Board that they were committed to growing the great Treasury team and the work done for the ARM Board.

CHAIR BOB WILLIAMS moved to the CIO report and recognized Chief Investment Officer Hanna.

### **CIO REPORT**

MR. HANNA stated that his report was on Pages 78 and 79 of the board packet. He noted that the start of the fiscal year had been better than the end. The market tug-of-war between inflation and growth continued, and it clearly is going to be exceedingly difficult for the Fed and other Central Banks to control inflation without material growth consequences. The markets continue going through alternating waves of fear and relief. He updated the Board on the two Callan manager searches that were authorized at the last meeting. Callan has provided a preliminary list of 19 private-debt manager prospects out of a larger universe. Semifinalists were discussed, and we are moving forward with on-site due diligence conducted largely by Mr. Carson. The expectation would be to report to the Board in December on the intended hire, the final negotiation and contracting process. The second search was an international equity manager search, and we expect to recommend a few additional international equity managers to the Board from the 16 prospects. Staff is doing further analysis and due diligence to narrow the list prior to having a semifinalist discussion with Callan in October. He moved to the watchlist, which currently has four managers on it: Two for personnel turnover; and two for performance. There is also one recommended addition at this meeting. One of the international equity managers' performance, Baillie Gifford, had lagged the index. There was also a peer-comparison task: if a manager fails, they would qualify for watchlist placement.

CHAIR BOB WILLIAMS requested a motion to add Baillie Gifford to the watchlist.

**MOTION: A motion to add Baillie Gifford to the watchlist was made by TRUSTEE RYAN; seconded by TRUSTEE KROHN.**

*After the roll-call vote, the MOTION was APPROVED. (Trustee Moen, yes; Trustee Ryan, yes; Trustee Bretz, yes; Trustee Hippler, yes; Commissioner Mitchell, yes; Trustee Mike Williams, yes; Trustee Krohn, yes; Chair Bob Williams, yes).*

MR. HANNA continued that private equity would be discussed in depth at the December meeting, including selection, the processes that staff and managers go through. He added that the first two items would be the private-equity investments made by staff during this period. He continued that Item B was a \$40 million private equity commitment to Glendon Opportunities Fund III. He explained that Glendon was a distressed debt group targeting market dislocations. Items C and D were talked about in committee and were amendments to Stable Value Wrap contracts with Mass Mutual and New York Life to reduce fees. Item E is a sizeable amendment to the T. Rowe Price Target and Balance Fund contract that both increases investment options and either lowers or leaves the fees the same for all participants. He stated that Item 4 continues with the summary of the portfolio rebalancings from between May and August. He added that five internal rebalance transactions were conducted over this period to equalize the relative allocations across the plans they run.

CHAIR BOB WILLIAMS thanked Mr. Hanna and moved to the Legal Report with Assistant

Attorney General Ben Hofmeister.

## **LEGAL REPORT**

MR. HOFMEISTER began with the good news of no constitutional and unfinished new clause cases to report on. He reported on one case that he touched on in November after oral arguments were heard from the Supreme Court. Miller versus the Division of Retirement and Benefits deals with the jurisdiction of the Office of Administrative Hearings. He explained what the quasi-judicial agency within the executive branch did and explained the case. He concluded his report and mentioned that there would be a few more administrative decisions that would be talked about in future months.

CHAIR BOB WILLIAMS thanked Mr. Hofmeister and moved to the Chair report.

## **CHAIR REPORT**

CHAIR BOB WILLIAMS stated that he had preparation meetings with CIO Hanna, Actuarial Chair Hippler, Kevin Worley, David Kershner for the committee meeting and this meeting. He expressed his deep appreciation for the retirees that Director Leary mentioned and looks forward to working with the incoming staff that will replace them. He also wished a happy retirement to former Commissioner Lucinda Mahoney, and warmly welcomed current Commissioner Mitchell. He continued that Commissioner Mitchell had some prior commitments and would not be present late this afternoon or tomorrow. He added that Commissioner Mitchell was also on the Permanent Fund Board. He shared that IAC Member Jerry Mitchell who, on June 30<sup>th</sup> next year, will have served in that capacity to this Board for 30 years. Dr. Mitchell would be stepping off of the IAC on June 30<sup>th</sup>. He reminded all that Dr. Mitchell managed domestic international equity portfolios for the Institution of Mutual Funds for over 25 years at Wellington Management Company where he was a partner. He shared a deep appreciation for Dr. Mitchell's service.

DR. JERRY MITCHELL thanked the Chair.

CHAIR BOB WILLIAMS concluded his report, and moved to Committee Reports.

## **COMMITTEE REPORTS**

### **AUDIT COMMITTEE REPORT**

CHAIR MIKE WILLIAMS stated that the Audit Committee of the Alaska Retirement and Management Board met on Wednesday, September 14, 2022. The status report from the outside auditors, KPMG, and their work for the fund financials for fiscal year ending on June 30, 2022, was reviewed. He continued that they were midway into the audit with the objective of completing in early October. The committee would follow up on October 10<sup>th</sup> with the goal of completing working on the retirement fund financials by October 15<sup>th</sup>. He said that the committee heard reports from the Division of Retirement Benefits on staff vacancies and the status of employer audits. There were some challenges with staff turnover, and other issues, and they are behind schedule, but hoped to be back on track soon. He concluded the Audit Committee's report.

### **DC PLAN COMMITTEE REPORT**

CHAIR BOB WILLIAMS reported that this meeting had a risk discussion and went over a lot of information. He thanked T. Rowe Price for giving a thoughtful overview of the work they had

done to transition the target date funds. This was one of the most important things for most of the DC members. He added that the target date fund is the main building block for them. He continued that Treasury negotiated a reduction in fees while improving quality with T. Rowe Price; which was going well and on track. He thanked Assistant Attorney General Hofmeister for putting together a presentation looking at what the pathways would be if there was a desire to increase the retirement security of some of the DC members that did not have supplemental benefits. He moved to the report by Chief Pension Officer Puckett. There was a prior understanding that they were looking for a one-year extension for doing the recordkeeping RFP, and he was surprised that they put in for a two-year extension. There was also an update from Empower on fee transparency, and there were still some of the same issues discussed in prior meetings. There was an update from CIO Hanna which resulted in a motion from the Defined Contribution Committee.

**MOTION:** A motion from the Defined Contribution Committee recommended that the Board have staff enter into a contract with Callan to do an investment structure analysis which would provide a report which would include an in-depth, comprehensive evaluation, improved investment options and products, as well as possible candidates for addition, removal, or replacement. The investment structure around employee-directed Defined Contribution Plan should offer an array of non-overlapping investment options and enable each participant to construct and diversify the portfolio in accordance with their individual time horizon and risk tolerance.

CHAIR BOB WILLIAMS stated that since it was a motion from the committee, there was no need for a second. He asked for discussion.

COMMISSIONER MITCHELL added to the financial component a legal component and suggested that the Attorney General's Office be engaged in that recommendation process to ensure that the prudent course was taken.

CHAIR BOB WILLIAMS included that within the motion. He asked for any other questions. There being none, he asked for a roll-call vote.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Ryan, yes; Trustee Moen, yes; Commissioner Mitchell, yes; Trustee Krohn, yes; Trustee Hippler, yes; Trustee Bretz, yes; Trustee Mike Williams, yes; Chair Bob Williams, yes.)*

CHAIR BOB WILLIAMS concluded his report, and recognized Chair Moen for the Operations Committee report.

### **OPERATIONS COMMITTEE**

TRUSTEE MOEN stated that the Operations Committee met September 14, 2022. There was a Treasury report from Director Leary on trustee travel and honorarium meeting cost, and a follow-up on the new format for minutes. He added that original transcripts of meetings will continue to be available for anyone that wants them. There was also a report on the Treasury Middle Office update. He said the committee also discussed future calendars, agenda items, and possibly some future meetings in Fairbanks.. He stated that one motion came out of the Operations Committee which was approving the renewal of Ms. Ryerson's IAC contract. The

motion was to approve the contract for a 2.5-year period in order to get it aligned with the fiscal year.

**MOTION:** A motion from the Operations Committee recommended that the Board approve renewing Ms. Ryerson's IAC contract for a 2.5-year period, to realign it with the fiscal year.

TRUSTEE MOEN stated that since the motion came out of the Operations Committee, a second was not needed. He asked for a roll-call vote.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Ryan, yes; Trustee Moen, yes; Commissioner Mitchell, yes; Trustee Krohn, yes; Trustee Hippler, yes; Trustee Bretz, yes; Trustee Mike Williams, yes; Chair Bob Williams, yes.)*

CHAIR BOB WILLIAMS thanked Trustee Moen and moved to the Alaska Retirement Health Plan Advisory Board with the ARM Board representative Trustee Bretz.

#### **ALASKA RETIREMENT HEALTH PLAN ADVISORY BOARD**

TRUSTEE BRETZ reported that there was an upcoming meeting on September 27<sup>th</sup>, and we will have a more in-depth report at the next ARM Board meeting.

CHAIR BOB WILLIAMS thanked Trustee Bretz, and moved to the Actuarial Committee report from Trustee Hippler.

#### **ACTUARIAL COMMITTEE REPORT**

TRUSTEE HIPPLER stated that the Actuarial Committee met yesterday and the first thing they went over was inflation. He continued that the inflation numbers are much more volatile currently than they had been in a while. We will continue monitoring the inflation numbers over the near term, looking at the appropriateness of the projections of inflation in the future. The majority of the discussion focused on the funding rates for various plans, the appropriate levels of funding, the normal cost of the healthcare trusts. He added that Mr. Detweiler from GRS pointed out that looking at the present value of future benefits of the plan as a more comprehensive viability measure, which was still overfunded. He stated that the committee did ultimately recommend adopting seven resolutions. Then there was a discussion on the update on the actuarial standards, which included a measurement that would be indicated in the future. There were some legislative changes discussed by Mr. Oates. Mr. Kershner reviewed the online dashboards available for several members of staff, as well as all trustees, and they can be accessed at any time to see the modeling of the funds. He asked if it was acceptable for the committee to move the recommendations to adopt the resolutions.

**MOTION:** A motion from the Actuarial Committee recommended that the Board adopt Resolutions 2022-5, 6, 8, 9, and 10, as presented. This did not include Resolutions 2022-04 and 2022-07, which referenced exhibits and had more discussion.

CHAIR BOB WILLIAMS thanked Trustee Hippler for his report and added that the motions would not need a second because they were coming from the committee.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Krohn, yes; Commissioner Mitchell, yes; Trustee Ryan, yes; Trustee Moen, yes; Trustee Mike Williams, yes; Trustee Bretz, yes; Trustee Hippler, yes; Chair Bob Williams, yes.)*

**MOTION:** A motion from the Actuarial Committee recommended that the Board adopt Resolutions 2002-04 and 2002-07, the versions indicated in Exhibit 2.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Krohn, yes; Commissioner Mitchell, yes; Trustee Ryan, no; Trustee Moen, yes; Trustee Mike Williams, yes; Trustee Bretz, yes; Trustee Hippler, yes; Chair Bob Williams, yes.)*

TRUSTEE HIPPLER stated that there was an information item on JRS contributions, but it had no action item related to it, and concluded his report.

CHAIR BOB WILLIAMS called a 15-minute break.

(Break.)

CHAIR BOB WILLIAMS called the meeting back into session and welcomed Steve Center and Butch Cliff.

## **PRESENTATIONS**

### **PERFORMANCE MEASUREMENT 2<sup>nd</sup> QUARTER**

MR. CENTER began by congratulating and welcoming Commissioner Mitchell to the Board. He then introduced Butch Cliff, executive vice president and director of research at Callan. He continued that in his role, he oversees the goal manager research and the capital markets research teams. He initially helped develop their performance measurement system;; and was also the chair of the Alternatives Review Committee. Mr. Cliff relocated from San Francisco to Portland when that office opened and was excited to make work with the Alaska Retirement Board. Mr. Center noted that Paul Erlendson would be retiring at the end of the calendar year, and will be at the December meeting. He also mentioned Michelle Prebula's retirement and stated that she was a great person to work with on the defined contribution side. He congratulated her on her retirement and wished her the best of luck. He asked Mr. Cliff to talk about the markets.

MR. CLIFF stated that it was an honor to be there and that he had worked with Paul Erlendson for over 30 years, and he has earned his retirement. He began with some perspective on the market performance pre-pandemic, to the post-pandemic peak, to the present. He went through the market performance and talked about inflation. He moved to U.S. Equity and talked about value versus growth. He stated that value did much better than growth. He continued that bonds were hit very hard, and high-yield bonds went down a lot. He added that the private equity universe had not done as badly as the public equity universe. There may be more negative returns, but not as negative as the public equity numbers.

MR. CENTER continued with the PERS DC plan which ended the fiscal year with about \$1.8 billion in assets. About 65 percent of those assets were invested in the asset allocation funds, which was the Alaska Balance Trust and the target date funds. The remainder split between the active and passive and specialty options. He moved to some of the quarterly dynamics as far as cash flows in and out, and the impact of the market. He looked at performance and talked about

the benchmarks that had fallen below the median. He stated that the actual target date funds managed by T. Rowe Price had performed very well relative to both peers and their benchmarks over all time periods shown. He touched on the two J.P. Morgan smart retirement funds, which were designed to be retirement income options for participants. He stated that when there is strong relative out-performance, particularly in a down market, it is called downside protection. This was pretty great downside protection from the investment team. The asset allocation, as of the end of the fiscal year, was pretty close to its targets; slightly underweight to the public equity markets. He continued that the domestic equity portfolio had a strong performance for the last year relative to its benchmark. He invited the trustees to attend Callan's annual conference in Scottsdale, Arizona, scheduled for April 2023. There will be more information as the date approaches.

CHAIR BOB WILLIAMS thanked Callan, and moved to the risk report by State Investment Officer Shane Carson.

### **RISK REPORT**

MR. CARSON stated that he would provide an oversight of the multi-asset asset classes that were renamed for this fiscal year. He also presents risk reporting to the Board twice a year. In most cases, there is usually not a lot to be concerned about. He said he would try to provide some context, but the overall theme is everything looks as it should, with not a lot of concerns. He explained that the Board sets the asset allocation which effectively dictates a lot of the overlying risks, and he provided some long-term reports of those risks. He commented that there were a lot of risks that the retirement systems face. The focus of this particular presentation is on investment risk. He added that there was also operational risk, longevity risk, different demographics, and changes in demographics. A lot of those are addressed decisions the Board makes. He explained the Risk Monitoring Tool, truView, that is used to answer several key questions: What is the portfolio positioning? Where is this asset allocation? What were the potential losses? He added that there were no concerns at this time. He continued that all risk metrics were within expectations, with equities being the largest driver of volatility and value-at-risk. The ARM Board invests in a diversified basket of international stocks. There were not any significant changes, especially on the negative side, in any of the scenarios that would cause alarm or concern in the portfolio.

CHAIR BOB WILLIAMS thanked Mr. Carson and called for a lunch break.

(Lunch break.)

CHAIR BOB WILLIAMS stated that the meeting was back in session and recognized Steve Sikes to make introductions for the BlackRock US Corp Property Fund presentation.

### **BLACKROCK US CORE PROPERTY FUND**

MR. SIKES explained that real assets are defined by return objectives. The asset class over a market cycle was expected to provide an experience between stocks and bonds to provide both income and a source of equity growth. This was illustrated by real estate where leases provide current income where the value of the asset can also grow through appreciation. These assets are tangible, physical assets with an intrinsic value tied to their utility for productivity potential. The infrastructure portfolio reflected this with investments in utilities, ports, airports, and energy infrastructure. These assets are expected to diversify the portfolio and provide an inflation

hedge. He continued that, as investment managers make their presentations, how these assets responded for inflation will be heard. He introduced the BlackRock U.S. Corp Property Fund. ARMB had \$435 million invested in the BlackRock fund as of June. He continued that the BlackRock fund is an open-end comingled fund which invests in multiple property types. It is a perpetual life vehicle where institutional investors pool capital to achieve scale and bear diversification and strategy execution. One of the key characteristics of this portfolio is the large asset investment exposure it could provide to ARMB. He introduced Laura Champion, director with BlackRock Institutional Client Business.

MS. CHAMPION thanked Chair Williams, the ARM Board and staff for the opportunity to present today. She stated great appreciation to the partnership with the ARM Board and the continued trust placed with them on behalf of the underlying beneficiaries. She continued that she worked on the broader ARM Board relationship on behalf of BlackRock. She introduced her colleagues, Lizzy Kurz and Ben Young. Mr. Young oversees the U.S. Real Estate Private Equity business, in addition to the global real estate separate accounts. Ms. Kurz is the lead portfolio manager for the U.S. Core Property Fund. The plan for the presentation was to provide an update on the platform, the real estate business, and where the U.S. core property strategy sits within the broader BlackRock U.S. system. She welcomed the opportunity to keep things conversational and to ask questions along the way.

MR. YOUNG stated that it was nice to be in Alaska in person and thanked all for the time in the partnership. He began with a brief background of BlackRock, and then moved to the partnership with Alaska Retirement. He also discussed the awareness of market volatility and the understanding of what was happening in the public and the private markets. He asked Ms. Kurz to continue.

MS. KURZ emphasized three key points and began with the volatility of the market environment and how they were positioned to perform in that environment. Second was performing in an inflationary or high inflationary environment. Third was adapting to the market with their investment style and how that benefitted the Fund with respect to future performance.

MR. YOUNG highlighted that last year was an anomaly with the returns in core real estate. He stated that they had outperformed over the past four years. Even though it was an open-ended fund, it is a long-term investment in real estate, and it was how they performed through the ups and downs of the cycles. The consistent nature of it shows the confidence about those returns.

CHAIR BOB WILLIAMS thanked BlackRock for the presentation, and recognized Steve Sikes for a presentation by USB Real Estate Separate Account.

#### **UBS REAL ESTATE SEPARATE ACCOUNT**

MR. SIKES stated that UBS had managed the Real Estate Separate Account for ARMB since 1997; 25 years. It is currently just under \$770 million. UBS strategy invests core U.S. real estate across property sectors and is ARMB's largest real estate account. He recognized Tom O'Shea, head of Portfolio Client Services.

MR. O'SHEA stated that it was great to be back in Anchorage. He noted that he heads up the portfolio and client service group, and introduced Jeff Maguire, the managing director and lead

portfolio manager for the account, and Pete Gilbertie, the executive director and manager of Portfolio Operations for the account. They had been with the account for a number of years. He gave a brief history on the background of the business and asked Jeff Gilbertie to continue.

MR. GILBERTIE began with some general comments about the overall market and then moved to the account and talked about its composition, its recent performance, and then explained how it performed the way it had, what drove it. He noted some key factors.

MR. MAGUIRE continued to the leverage and volatility. He explained that volatility was measured in terms of the gross standard deviation. He stated that the ODCE Index was a collection of data kept by the National Council of Real Estate Investment Fiduciaries, NCREIF. NCREIF has some major indices with comparative data available of performance for comparison purposes. The ODCE is an open-end fund index. All of the open-end funds report their performance to NCREIF, which is presented as an index; a collection of fund-level returns. It is a good benchmark, particularly if the comparison is separate account versus investing in an open-end fund.

MR. GILBERTIE presented the one-year attribution for the four property sectors in the account.

MR. MAGUIRE did a quick review of the plan for the current fiscal year ending June 30, 2023. There was a budgeted NOI increase. He acknowledged that the office properties in the account have the negative impact on the NOI growth. That was one of the reasons to pare back the relatively small 22 percent, which could continue for a couple of years.

CHAIR BOB WILLIAMS thanked USB for the presentation, and called a break.

(Break.)

CHAIR BOB WILLIAMS called the meeting back to order and recognized Steve Sikes to introduce the Timberland Investment Resources presentation.

#### **TIMBERLAND INVESTMENT RESOURCES**

MR. SIKES stated that Timberland Investment Resources had been an investment manager for ARMB since 2018. TIR was exclusively focused on timberland management in the middle-market transactions and manages a separate property for ARMB with a value of just over \$380 million. He recognized Tom Johnson, head of client services and business development.

MR. JOHNSON provided introductions for Mark Seaman, chief executive officer; Hong Fu, director of economic research; and Chris Mathis, director of real estate and corporate development. He began with a quick update on the firm, covered the timber basics, and the role of timberland in the portfolio. He explained that they were known as the middle market, value-oriented manager. They look for properties that have some type of inefficiencies or mispricing. He asked Mr. Fu to continue.

MR. FU continued with a quick review of what happened last year and identified some key economic trends and market developments that would have an impact on timberland investment in general, as well as their portfolio for this year and coming years.

MR. JOHNSON stated that one of the objectives was diversification, and he highlighted the broad footprint throughout the United States. He reviewed the portfolio, and summarized that the timber market's strength was because of the housing sector; not only new housing starts, but also repair and remodeling. There was also a lot of interest in timberland by retail investors that purchase some of the smaller parcels because they want to recreate, have a place to visit, and a long-term investment. Those parcels get premium prices, which is an attractive part of the opportunities set. He continued that the losses over the last five years were one basis point a year. The average in the industry is about three basis points. The experience from a risk perspective had been very good over the last five years. He touched on some emerging and developing trends, and thanked the Board for the relationship.

CHAIR BOB WILLIAMS thanked TIR, and called a break.

(Break.)

CHAIR BOB WILLIAMS called the meeting back in session and asked for a motion to go into Executive Session.

**MOTION:** A motion for the Alaska Retirement Management Board to go into Executive Session to consider a matter related to a specific manager, the immediate knowledge of which may harm the character or reputation of the persons discussed, was made by TRUSTEE RYAN; seconded by TRUSTEE HIPPLER.

*There being no objection, the MOTION was APPROVED.*

CHAIR BOB WILLIAMS stated that the Executive Session would be for staff in the room and trustees.

(Executive Session from 4:06 p.m. until 4:37 p.m.)

(Alaska Retirement Management Board recessed at 4:38 p.m.)

**September 16, 2022**

### **CALL TO ORDER**

CHAIR BOB WILLIAMS called the Alaska Retirement Management Board meeting into session and welcomed all back. He noted that yesterday they came out of Executive Session at 4:37 p.m., and no actions or decisions were made within Executive Session. He stated that they would begin with Sentinel Real Estate Separate Account, and asked Steve Sikes for the introduction.

### **SENTINEL REAL ESTATE SEPARATE ACCOUNT**

MR. SIKES stated that, similar to UBS, Sentinel manages the real estate separate account. He continued that the properties discussed were 100 percent owned by ARMB and under its control. The Sentinel strategy is focused on their specialty, apartment properties. One of the unique characteristics of Sentinel is that it is a vertically integrated business; it handles not only investment selection and management, but also operates the properties day to day. He introduced George Tietjen, the portfolio manager.

MR. TIETJEN apologized for not presenting in person. He noted that all at Sentinel remain thankful for the opportunity to be the real estate investment manager since 1984. This is a 38-year relationship, and they looked forward to providing the same high-quality service many years into the future. He stated that he was the managing director at Sentinel and has been a portfolio manager of the ARM Board separate account since 2016 when David Weiner retired from Sentinel. He noted that he is also a portfolio manager for the flagship core, open-end apartment fund and a few other separate accounts. He added that he had been with the firm for 33 years in a number of different capacities. He introduced Greg Macchia, an associate in the global portfolio management group at Sentinel, who supports this account. David Stenger was a long-term co-portfolio manager with him and moved, within Sentinel, over to an acquisition role where he continues providing good quality service to the account. The most recent acquisition of a property for this account was led by his efforts. He provided an overview of Sentinel, and where they are presently. He gave an update on the multifamily market conditions in the United States, and on this account. Included was a brief discussion on each of the five investments this account has made. He also made sure to adequately cover the impact that inflation and the higher interest rates were having on the real estate sector and, in particular, the multifamily sector. He stated appreciation for the opportunity to provide this presentation and looked forward to continuing to work hard in the future.

CHAIR BOB WILLIAMS thanked him, and recognized Steve Sikes to introduce the UBS Farmland presentation.

#### **UBS FARMLAND**

MR. SIKES stated that ARMB made a decision to begin investing in farmland, which is not a common institutional portfolio component. He continued that the asset class is difficult and time-consuming to penetrate at scale due to its fragmented ownership. He added that the idea was simple: find a farmland and rent it out to good farmers; collect the rent; and enjoy modest appreciation along the way. With patience and persistence, that portfolio has grown to just over \$964 million and delivered on its original performance objectives. He recognized Tom O'Shea, head of portfolio and client service, to introduce the farmland team and review the portfolio.

MR. O'SHEA introduced Jim McCandless and Dan Murray. Mr. McCandless was the founder of a business a number of years ago. He is an industry expert and very active in the farmland space. Mr. Murray has over 13 years of experience in the field and is co-chief investment officer of the business.

MR. McCANDLESS gave a brief overview of the firm and the business; and then looked at the Midnight Sun portfolio, which is the name of the entity that holds titles to properties in the portfolio. He explained that the business is based in Hartford, and in the same offices as UBS Realty. The team just focuses on farmland investing and utilizes UBS Realty staff for back-office and client-facing activities. There are four regional offices across the country, and farmland investing is very local. In order to be successful, there is a need to have a lot of local contacts in order to originate investment opportunities. He added that the offices are also responsible for the asset management of the properties and the dispositions along the way.

MR. MURRAY explained, in detail, the performance and updated what had happened over the last four quarters.

CHAIR BOB WILLIAMS stated concern on the very consistent underperformance of the benchmark.

MR. MURRAY replied that there were a number of issues with the benchmark in that it is not investable and is a material issue in that it removes properties from the benchmark that are undergoing complete development. He gave an apple orchard as an example. He stated that some of those benchmark returns do not necessarily reflect what is investable with a number of issues with the index. He continued explaining how farmland returns tended to pick up when there were more extreme areas of inflation.

CHAIR BOB WILLIAMS thanked them for their stewardship, and for the presentation. He called a break.

(Break.)

### **JPM ASSET MANAGEMENT INFRASTRUCTURE INVESTMENT FUND**

CHAIR BOB WILLIAMS called the meeting back into session and recognized Mr. Sikes to introduce the J. P. Morgan Asset Management Infrastructure Investment Fund.

MR. SIKES explained the expansion of the real assets portfolio to add infrastructure strategies. Infrastructure offered immediate characteristics to the first area where a global strategy was pursued. He continued that while the investments were identifiable, they were made in confidence, requiring the management boards' corporate governance oversight. He pointed out that infrastructure came with additional complexity and was calibrated with a highest risk and return expectation. He introduced Jeff Shields.

MR. SHIELDS stated he was a client adviser in San Francisco covering Western U.S. institutional clients, including the Alaska Retirement Management Board. He introduced Nick Moller, the senior member of the infrastructure team. He thanked the ARMB, and stated appreciation for the opportunity to manage money on behalf of all the beneficiaries.

MR. MOLLER reminded all about what infrastructure was from an investment perspective, which was critical to some of the updates in terms of performance over the last four years and year to date. He explained that the core is regulated utilities. Think of natural monopolies where commodity risk is passed to customers such as heat, water, electricity, gas, utilities. Contracted assets, which could be renewable, and GDP sensitive assets: Rail leasing, storage, midstream, ports, airports. He stated that the majority of investments were those regulated utilities or long-term contracted assets. The goal of the strategy is diversification, inflation protection, and yield, which is pertinent to what was seen this year. He talked more about inflation protection, and continued discussing recent investments indicative of the expansion. He stated that Enstor Gas was the most recent new platform investment and is very small to start. It is for natural gas storage in the United States. Most contracted revenue is from utility customers. He explained that utilities have the ability to fill the storage when gas is cheaper, and to draw it down when it is more expensive. It helps with security and supply and not relying on the gas pipelines.

CHAIR BOB WILLIAMS thanked them for their presentation and recognized Steve Sikes to introduce IFM Global Infrastructure Funds.

## **IFM GLOBAL INFRASTRUCTURE FUND**

MR. SIKES stated that IFM, similar to J. P. Morgan, also manages an open-end perpetual life commingled fund in which ARMB invests. He continued that ARMB would probably not be able to invest in these assets privately if it were not for commingled vehicles, as a single asset size would be too big from a diversification standpoint. The IFM Fund owns assets such as the Indiana Toll Road and the Sydney Airport, which are substantial in size. He added that ARMB has \$651 million invested in the IFM Fund. He introduced David Altshuler, head of the North American relationship.

MR. ALTSHULER stated that Julio Garcia, the head of North American infrastructure was with him. He asked Mr. Garcia to continue.

MR. GARCIA stated that it had been business as usual over the last few years, and certainly since the last presentation. The fund has continued to grow and diversify both from an industry and a geographic perspective. This fund is approaching about \$45 billion of equity value with assets located in many parts of the ODCE. He moved to strategy, which was very consistent for many years: they invest in core structure assets with very high barriers to entry that are essential to the communities and economies in which they operate. He continued that they focus on three industry segments: utilities, which include gas and electric, water and telecom facilities; energy, midstream assets such as pipelines, LNG processing facilities, storage facilities and generation, both renewable and traditional; and transportation assets, primarily toll roads, airports, and seaports. One of the important components to the sector was protection from inflation. Next is interest in the investment strategy, and that it is an open-ended fund. There is also a focus on managing the assets. The view is the need to be very active in the management of the assets in order to continue to derive the target rate of return of the fund. He added that the fund itself targets investment-grade credit ratings for the majority of the assets. The team is very stable, and is one of the largest infrastructure teams around the world, with over 110 investment professionals, and also an additional legal, tax, and structuring group that works in-house. He talked about the steady team and the length they had been with the fund. He added that the diversification of the fund was quite beneficial and would help continue to the performance expected. He then went through the history of IFM and the ownership structure.

CHAIR BOB WILLIAMS thanked IFH, and called a lunch break.

(Lunch break.)

CHAIR BOB WILLIAMS called the meeting back into session and moved to Real Assets Annual Plan with State Investment Officer Steve Sikes.

## **REAL ASSETS ANNUAL PLAN**

MR. SIKES provided an overview of the portfolio and made recommendations for the fiscal year 2023 investment plan. After his presentation, Callan, the board's real assets consultant, provided their independent review of the portfolio and the strategy.

DR. JENNINGS stated that in looking at the REIT indices, a third of them were not things thought of as real estate. It underscored Mr. Sikes' diversification point. He continued, those

other consultants he worked with basically added a return premium for the nontraditional aspects of the REIT portfolio. He added that that was an interesting compliment to the rest of the portfolio.

MR. SIKES moved to the summary of the recommendations for the real estate portfolio. The core portfolio is slightly overweight, with no recommendations to add anymore capital. Both UBS and Sentinel have uninvested capital, and they have the ability to do financing, if there is an opportunity, and they think the market was attractive. He recommended an action item for the BlackRock Real Estate Open-End Fund. That fund is calibrated to reinvest the dividend instead of taking the distribution. Given that real estate is overweight and real assets are slightly overweight, he recommended taking the distribution. The non-core portion of the portfolio would stay the course. He moved to the farmland portfolio and stated that an interesting part of farmland investing was that many states have a prohibition of corporate ownership. He went through the Timberland portfolio and stated that the strategy would be to stay the course with the current portfolio, and not making additional allocations. He reported that the Board had been working on an HBU project in a Timberland property. Recently, the denial of a permit halted progress on that project. Going forward he talked about terminating the contract with TIR since that project is no longer viable, and to move those assets back into the separate account. He moved to the last component, which was the infrastructure portfolio. He stated that the encouraging thing about infrastructure was the discount rate the assets are valued at right now. The one recommendation in this portfolio is similar to the BlackRock Fund, currently with J.P. Morgan, in which we are reinvesting the dividend. Infrastructure is overweight, and the way to do that is take that dividend in cash. IFM had the reinvestment turned off a while ago because it was a much larger position. At the end of this, all of the open-ended funds will be calibrated to distribute the cash flow.

#### **CALLAN REAL ASSETS PLAN/PERFORMANCE REVIEW**

CHAIR BOB WILLIAMS moved to Callan, Real Assets Plan Performance Review, and asked Mr. Sikes to make the introduction.

MR. SIKES stated that the Board had two relationships with Callan: one is the general consulting relationship; and the other is real asset specialist. This started in 2019, and we just contractually executed the first of two one-year extensions.

MR. GOULD stated that he was in Callan's real assets consulting group. He added that online was Avery Robinson, who heads the group and works with him on the ARM Board Plan. He gave an overview of the plan structure, what its objectives were, and its role in the overall portfolio; and then touched on the portfolio composition, and performance. He reminded all that the role of the portfolio was to be a diversifier to the overall portfolio, and to add a bit of income, a bit of inflation protection, and to be more of a steady return in between stocks and bonds over time.

CHAIR BOB WILLIAMS moved to Real Asset Action Items, Plans and Guidelines, and recognized Steve Sikes.

## REAL ASSETS ACTION ITEMS – PLANS & GUIDELINES

MR. SIKES stated that he had presented the annual plan and highlighted the big action items that will drive changes. The changes are around the J.P. Morgan Open-Ended Infrastructure Fund and the BlackRock Real Estate Open-End Fund as it related to the reinvestment of dividends. Currently, those funds are reinvesting the dividend, and this action will change that. The Board will receive the cash flow. He moved to the HBU project in the Timberland portfolio due to the denial of permits necessary for that project. He recommended the ARMB approve Resolution 2022-11, which adopted the Real Assets Annual Investment Plan for Fiscal Year 2023.

CHAIR BOB WILLIAMS requested a motion.

**MOTION:** A motion that the ARMB approve Resolution 2022-11, which adopts the Real Assets Annual Investment Plan for Fiscal Year 2023, was made by TRUSTEE HIPPLER; seconded by TRUSTEE KROHN.

CHAIR BOB WILLIAMS called a roll-call vote.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Moen, yes; Trustee Ryan, yes; Trustee Mike Williams, yes; Trustee Hippler, yes; Trustee Krohn, yes; Chair Bob Williams, yes.)*

CHAIR BOB WILLIAMS moved to the next one.

MR. SIKES stated that the next action item related to the Real Estate Investment Guidelines. He explained that each one of the major areas have their own guidelines, and he walked through real estate, then farmland, then timberland, and then infrastructure. He added that part of this annual process is going through the guidelines to see if anything needed to change. The real estate investment guidelines recommended two changes. First, is calibrating the real estate benchmark weights and the guidelines to the target weights in the real-assets portfolio.

**MOTION:** A motion that the ARMB approve Resolution 2022-12, which adopts the Revised Real Estate Investment Guidelines, was made by TRUSTEE MIKE WILLIAMS; seconded by TRUSTEE MOEN.

CHAIR BOB WILLIAMS asked for the roll-call vote.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Ryan, yes; Trustee Mike Williams, yes; Trustee Bretz, yes; Trustee Hippler, yes; Trustee Krohn, yes; Trustee Moen, yes; Chair Bob Williams.)*

CHAIR BOB WILLIAMS moved to Resolution 2022-13.

MR. SIKES stated that the next item was the Farmland Guidelines. The change would be viewed as an administrative and catching-up of the guidelines to a decision the Board made in the past. The revision was to align the crop-type weights with the current asset allocation policy; revising from 60/40 to the current 80/20. That was the only change recommended.

**MOTION:** A motion that the ARMB approve Resolution 2022-13, which adopted the revised Farmland Investment Guidelines, was made by TRUSTEE MIKE WILLIAMS; seconded by TRUSTEE RYAN.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Hippler, yes; Trustee Krohn, yes; Trustee Bretz, yes; Trustee Moen, yes; Trustee Ryan, yes; Trustee Mike Williams, yes; Chair Bob Williams, yes.)*

CHAIR BOB WILLIAMS moved to Resolution 2022-14.

MR. SIKES stated that the next items were for the Timberland Investment Guidelines and the Infrastructure Guidelines. There are no revisions. These guidelines had not been before the Board for a couple of years, and he explained that he wanted to expose the guidelines to the Board as part of the review, and to just ask for approval for them again.

He recommended to approve Resolution 2022-14, which adopted the Revised Timberland Investment Guidelines.

CHAIR BOB WILLIAMS asked for a motion.

**MOTION:** A motion that the ARMB approve Resolution 2022-14, which adopted the Revised Timberland Investment Guidelines, was made by TRUSTEE RYAN; seconded by TRUSTEE KROHN.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Moen, yes; Trustee Mike Williams, yes; Trustee Hippler, yes; Trustee Krohn, yes; Trustee Bretz, yes; Trustee Ryan, yes; Chair Bob Williams, yes.)*

**MOTION:** A motion that the ARMB approve Resolution 2022-15, which adopted the Infrastructure Guidelines, was made by TRUSTEE RYAN; seconded by TRUSTEE MIKE WILLIAMS.

MR. SIKES stated that this was the same as Timberland, and he had no revisions. It was brought before the Board for exposure.

*After the roll-call vote, the MOTION was APPROVED. (Trustee Moen, yes; Trustee Mike Williams, yes; Trustee Hippler, yes; Trustee Krohn, yes; Trustee Bretz, yes; Trustee Ryan, yes; Chair Bob Williams, yes.)*

CHAIR BOB WILLIAMS asked for any unfinished business, new business, or any other matters to properly come before the Board. He asked if there was anyone online or in the room that would like to make public comments. No one identified, and he moved to IAC comments.

#### **INVESTMENT ADVISORY COUNCIL COMMENTS**

MS. RYERSON shouted out to Alysia Jones for a seamless Board meeting. She thanked Mr. Sikes for making it so educational. Her last comment was about the BEARS Project. She stated that when she was Santech's first client and continued, they became very happy with them

once the whole system was done. This is a ton of work for the staff. She looked forward to working with them for the next few years.

DR. JENNINGS stated that he had 19 years' experience. One thing about this meeting was how well-designed it was. He lauded staff on the format and the deeper dive, and also the good strategic time allocation.

DR. MITCHELL observed a complete review of the real asset class from consultants, from staff, from managers. Good questions were posed, and good answers were given. If he had been a member of the Board, he would be content that he had done his fiduciary duty; done his due diligence; and understood where the Fund was in terms of real assets. Second, real assets require a long-time horizon, and investing in real assets should be strategic and not tactical, which means long-term, not short-term. Third, if investing in something with a long-term time horizon, there should be long-term relationships with the managers. Fourth, the quality and the weightings of the individual investments in a real asset portfolio were important. In infrastructure, it really needs to be known what is owned because each individual property would influence the portfolio quite a bit. Finally, real assets can be pretty complicated, and someone on staff familiar with the asset class is needed, and Steve Sikes is the person.

CHAIR BOB WILLIAMS moved to trustee comments.

MS. JONES was not aware of any trustee comments. She thanked Ms. Ryerson for her comments, but she could not take all the credit. She acknowledged Grant Ficek and Richard Ebert for their assistance in making things appear seamless.

CHAIR BOB WILLIAMS said thanks to staff for a really well-run, organized, planned and prepared meeting. He stated that Mr. Sikes had a thoughtful, organized and enjoyable deep dive into real assets. He added that he took as a personal mission to talk Dr. Mitchell into coming in person, and he will continue that mission. He brought trustee comments to an end. He asked for any future agenda items. There being none, he asked for a motion for adjournment.

**MOTION: A motion to adjourn the meeting was made by TRUSTEE MOEN; seconded by TRUSTEE RYAN.**

*There being no objections, the MOTION was APPROVED.*

(Alaska Retirement Management Board meeting adjourned at 3:03 p.m.)

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Investment Advisory Council Member  
Contract Expiration

ACTION:   X  

DATE: December 1-2, 2022

INFORMATION: \_\_\_\_\_

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## BACKGROUND

AS 37.10.270 provides that the Alaska Retirement Management Board (Board) may appoint an investment advisory council (IAC) composed of at least three and not more than five members to advise the Board on investment policies, strategy, and procedure and to perform such other actions as specified by law or are requested by the Board, including providing advisory services to other state fiduciaries approved by the Board.

IAC members serve at the pleasure of the board for staggered terms of three years and shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate, or union pension benefit funds, foundations, or endowments. Currently, three IAC members are under contract to provide advisory services to the Board and other approved fiduciaries. The three advisory positions are designated by areas of expertise: an advisor with experience as trustee/manager of a public fund or endowment (Seat One), an advisor with experience as a portfolio manager (Seat Two), and an academic advisor (Seat Three). IAC members currently attend Board meetings, State Investment Review meetings, an annual manager review meeting, and annually participate in evaluating and recommending the strategic asset allocation for the plans.

## STATUS

Dr. William Jennings holds Seat Three, designated for a professor of investment theory or a closely related discipline at an accredited college or university. In November 2003, Dr. Jennings became an IAC member for the Alaska State Pension Investment Board, predecessor to the ARMB. He has been an IAC member of the ARMB since its formation in October 2005. Most recently, he was reappointed in 2020 to a three-year term that expires June 30, 2023.

Fellow IAC member, Dr. Mitchell's current term expires June 30, 2024. At the September 2022 Board meeting, Dr. Mitchell (Seat Two) announced his retirement from the IAC, effective June 30, 2023, which coincides with the end of Dr. Jennings term. Staff plans to begin soliciting for Seat Two in early 2023 with the intent to award a three-year contract effective July 1, 2023.

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## RECOMMENDATION

That the Alaska Retirement Management Board reappoint Dr. Jennings to the Investment Advisory Council and adjust the contract period to one year (July 1, 2023 – June 30, 2024) to maintain a minimum of three members, serving staggered three-year terms.

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# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Proposed Revisions to ARMB Policy  
& Procedures Manual

ACTION: X

DATE: December 1, 2022

INFORMATION: \_\_\_\_\_

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## BACKGROUND

The Alaska Retirement Management Board (ARMB) Board of Trustees Investment Policy and Procedures Manual states:

*ARMB, through the Liaison Officer of the Department of Revenue, shall annually revisit the need to update or supplement provisions contained in this manual. A report at least once a year with regard to updating the manual shall be delivered to ARMB.*

## STATUS

Staff reviewed the current version of the ARMB Board of Trustees Investment Policy and Procedures Manual and proposes the following edits:

**Vision ~~on~~ Purpose:** To be the best run and managed pension fund in the country.

Definition of “Best run and Managed”

1. Best financial performance: That we achieve superior investment returns on a risk-adjusted basis relative to ARMB’s strategic asset allocation benchmark while ~~considering-limiting~~ total risk ~~compared to that of an~~ the average public sector plan over the long term.

## RECOMMENDATION

The Operations Committee recommends the Alaska Retirement Management Board approve the proposed changes to the Alaska Retirement Management Board of Trustees Investment Policy & Procedures Manual, as indicated in the red-line edits shown above.

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## REPORT ON ALASKA RETIREE HEALTH PLAN ADVISORY BOARD MEETINGS SEP 27, NOV 3, 2022

The advisory board facilitates engagement and coordination between the State's retirement systems' members, the ARMB, and the Commissioner regarding the administration of the retiree health plan. At the September and November 2022 meetings there was a lot of discussion over plan utilization, trends and legislation. Recommendations were made regarding Gene-based, Cellular, and other Innovative Therapies (GCIT) and a Precertification Penalty Removal Program Proposal.

### GCIT

The board recommended the addition of GCIT Designated Network Services in the AlaskaCare Defined Benefit Retiree Health Plan.

GCIT are a relatively new and rapidly advancing area of medical treatment that are intended to treat or cure previously untreatable or difficult to treat conditions. The therapies can range in cost from \$600,000 to \$2.5 million per course of treatment. Because many of these therapies are new to market, many traditional cost controls and network agreements do not apply. This leaves the Plan and members with little financial protection and oversight.

The Plan's current Third-Party Administrator (TPA) offers a GCIT Designated Network program which provides price protection, specialized clinical support and care coordination. Additional eligible travel benefits of up to \$10,000 per course of treatment will be available to members seeking GCIT Designated Network services.

Implementing specific pharmacy exclusions and updating the Plan language accordingly to clarify that GCIT therapies are covered under the medical plan, rather than the pharmacy plan, would align with emerging mainstream industry standards. Excluding the cost of GCIT drugs or products included in the GCIT Designated Network program from accumulating toward a member's lifetime maximum benefit would provide some financial protection to members seeking these services.

The Division of Retirement and Benefits (Division) has proposed to update the Plan's provisions related to GCIT services as outlined in detail in the GCIT Network Benefits Program Proposal. The Program Proposal has been evaluated by an independent certified Fellow of the Society of Actuaries, who found that the proposed change is administrative in nature and would not change coverage or limit access to necessary care, and as such would not have an impact on the actuarial value of the Plan. The proposed change is anticipated to save the Plan an average of 17% below the listed average wholesale price for applicable therapies.

### Precertification

The board recommended the AlaskaCare Defined Benefit Retiree Health Plan adopt and implement the proposed update to the Plan's precertification provisions as outlined in the proposal submitted to the Board on September 27, 2022, to be effective January 1, 2023.

The Plan currently contains provisions requiring certain medical services to undergo precertification to confirm the medical necessity of care before services are delivered. The Plan's medical Third-Party Administrator (TPA) actively maintains and updates publicly available lists of services requiring precertification in alignment with current medical evidence that apply to the TPA's contracts with network providers. If a member fails to obtain precertification for certain medical services, coverage may be reduced or limited. The Plan's penalties and benefit limitations for failure to precertify can practically only be applied to people receiving covered services. Removing the Plan's penalties and benefit limitations associated with failure to precertify would not change the current requirement that care must meet medical necessity standards to be eligible for coverage.

The Division has proposed to update the Plan's precertification provisions as outlined in detail in the Precertification Penalty Removal Program Proposal presented to the Retiree Health Plan Advisory Board on September 27, 2022. The Program Proposal has been evaluated by an independent certified Fellow of the Society of Actuaries, who found that the proposed change is administrative in nature and would not change coverage or limit access to necessary care, and as such would not have an impact on the actuarial value of the Plan. The proposed change is anticipated to increase annual Plan costs by approximately \$1 – 1.25 million, representing 0.15 – 0.20% of annual plan costs.

Next Meeting – February 9, 2022



# Alaska Retirement Management Board Discussion with Those Charged with Governance

Audit results for the year ending June 30, 2022

November 30, 2022

# Audit results: Overview

<p><b>Outstanding matters</b></p> <p>None</p>	<p><b>Deficiencies</b></p> <p>Ongoing material weakness related to census data at the National Guard and Naval Militia Retirement System</p>	<p><b>Auditors' report</b></p> <p>PERS – Unmodified            TRS – Unmodified            JRS – Unmodified            NGNMRS – Qualified            DCP – Unmodified            SBS – Unmodified            Invested Assets - Unmodified</p>
<p><b>Uncorrected Misstatements</b></p> <p>Ongoing uncorrected misstatement related to the timing of the valuation reporting for the Invested Assets private portfolio – this relates to the ARMB Invested Assets report only.</p>	<p><b>Corrected Misstatements</b></p> <p>None</p>	<p><b>Other</b></p> <p>No other matters</p>

# Summary: Audit results required communications and other matters

		Response
Audit results	Outstanding matters	None
	Significant unusual transactions	No significant unusual transactions identified during the audit.
	Uncorrected audit misstatements	See slide 5.
	Corrected audit misstatements	No corrected misstatements identified during the audit.
	Financial presentation and disclosure omissions	No matters to communicate.
	Non-GAAP policies and practices	No matters to communicate.
	Material weaknesses and significant deficiencies in internal control	See slide 6.
	Changes to our risk assessment and planned audit strategy	No matters to report.
	Significant accounting policies and practices	No matters to report.
	Significant accounting estimates	See slide 7
	Significant financial statement disclosures	See slide 8
	Related parties	No matters to report.
	Going concern	No matters to report.
	Other information	See slide 9

# Summary: Audit results required communications and other matters

		Response
Audit results	Subsequent events	No matters to report.
	Illegal acts or fraud	No actual or suspected fraud involving management, employees with significant roles in internal control, or where fraud results in a material misstatement in the financial statements were identified during the audit.
	Noncompliance with laws and regulations	No matters to report.
	Significant difficulties encountered during the audit	No matters to report.
	Significant findings or issues discussed, or the subject of correspondence, with management	No matters to report.
	Management's consultation with other accountants	No matters to report.
	Difficult or contentious matters for which the auditor consulted	No matters to report.
	Disagreements with management	No matters to report.
	Other significant matters	No matters to report.
	Written communications	Management representation letters, including summary of uncorrected misstatements and internal control deficiency letter, were distributed along with the letter to the audit committee in October.

# Uncorrected audit misstatements

This misstatement relates to the ARMB Invested Assets report only

Account	Increase (decrease) to invested assets	Increase (decrease) to investment income	As a % of reported
Private equity investments	\$(64,799,777)		(1.28)%
Private equity investment income		\$(64,799,777)	(13.34)%
Real Assets	\$(22,781)		(.001)%
Real Assets Income		\$(22,781)	(.004)%
Total investment income			(4.8)%

# Material weaknesses and significant deficiencies in internal control

Material weaknesses		
Description	Potential effects	Status
The Division of Retirement & Benefits did not design control activities to validate the census data for National Guard and Naval Militia Retirement System	The total pension liability for this system could be over or under stated as a result of inaccurate census data being used to calculate the amount.	Material weakness communicated in previous audits that has not yet been remediated.

Significant deficiencies		
Description	Potential effects	Status
None identified		

# Significant accounting estimates

## Description of significant accounting estimates

- Valuation of private investments

## Audit findings

### Management's process used to develop the estimates

- Management receives periodic capital statements from external fund managers. These capital statements are the starting point to estimate fair value of each private investment and are adjusted for any contributions or distributions made during the period and any other factors management believes impact fair value.

### Significant assumptions used that have a high degree of subjectivity

- None

### Indicators of possible management bias

- There were no indicators of possible management bias identified during our audit of this estimate.

## Conclusions

- We determined that the methods used by management and the valuations recorded by management are reasonable and not affected by indicators of management bias.

# Significant financial statement disclosures

Description of significant financial statement disclosures	Audit findings
<ul style="list-style-type: none"> <li>• The net pension (asset)/liability and net OPEB (asset)/liability disclosures are considered significant financial statement disclosures. These disclosures are prepared using management's specialist, Buck, to calculate the amount of the total pension and OPEB (assets)/liabilities based upon actuarial methods described in GASB Statements No. 67 and 74 and assumptions adopted by the ARMB.</li> <li>• Significant assumptions used that have a high degree of subjectivity are:               <ul style="list-style-type: none"> <li>• Rate of return</li> <li>• Mortality rates</li> <li>• Discount rate</li> </ul> </li> </ul>	<p><b>Qualitative aspects</b></p> <ul style="list-style-type: none"> <li>• As part of our testing, we involved a KPMG actuary to assist in our determination of the reasonableness of the assumptions.</li> <li>• The information contained within the disclosures are prescribed by GASB and consistent with prior years.</li> <li>• There were no indications that these estimates or the disclosures were prepared with management bias.</li> </ul>

# Other information

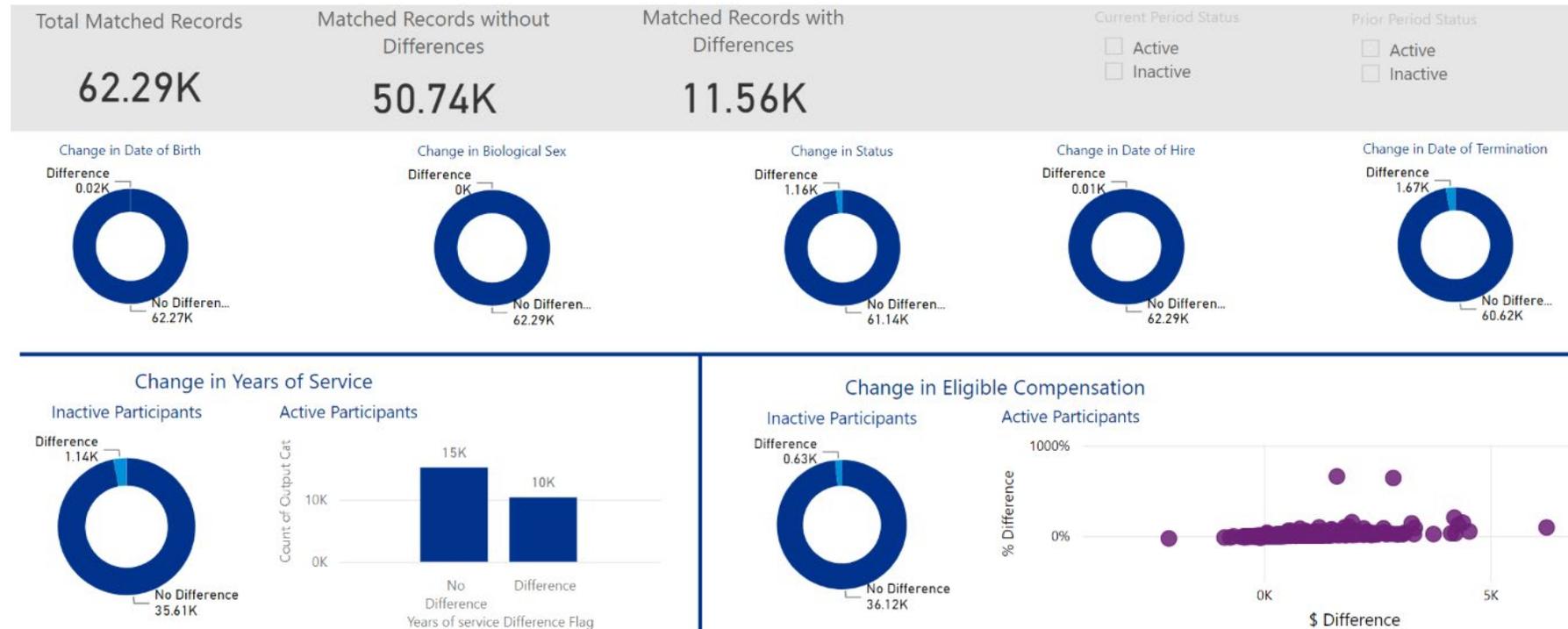
Other information	Procedures performed
PERS and TRS Annual Comprehensive Financial Reports	We will obtain copies of these reports prior to their issuance and review the financial information contained within to ensure consistency with the understanding we gained during our audit process.

# Census data insights - PERS

The census information included on this slide shows the comparison of the 2020 census data for active and retired members and the 2021 census data that is used in the actuarial valuation and the GASB 67 and 74 valuations.



## Census Data Visualization - Matched Records

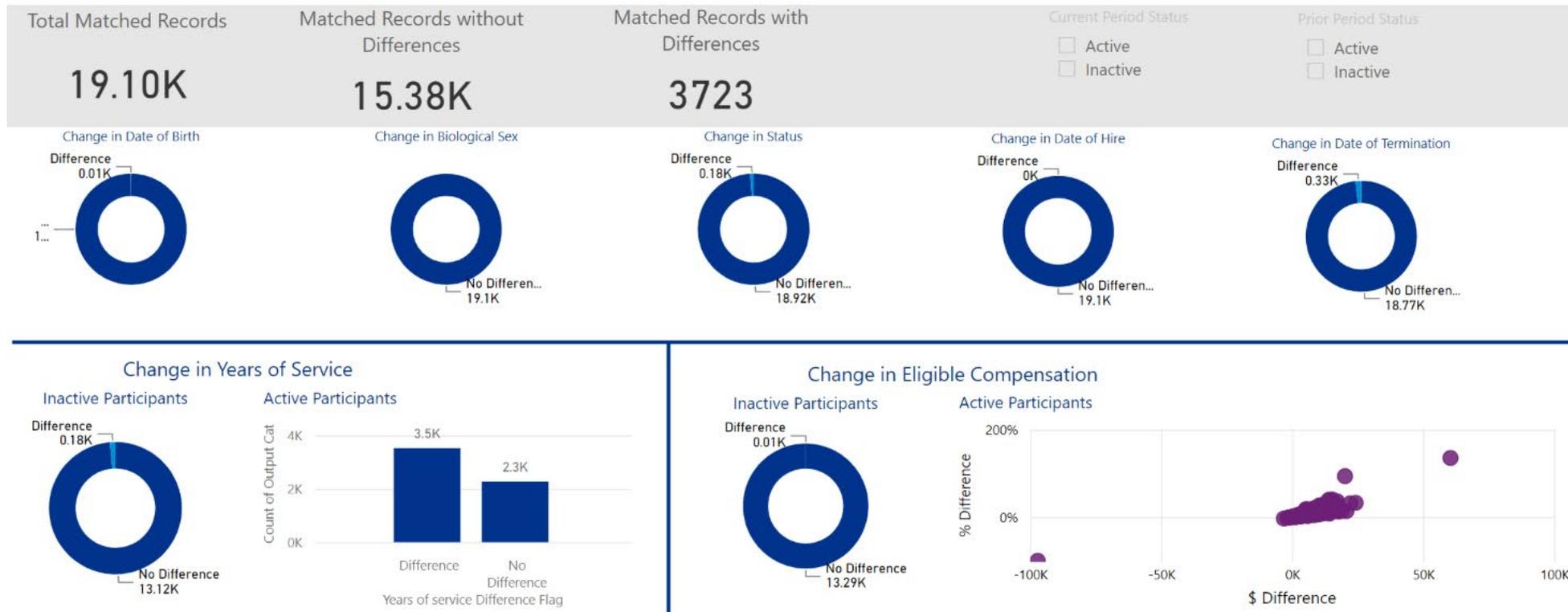


# Census data insights - TRS

The census information included on this slide shows the comparison of the 2020 census data for active and retired members and the 2021 census data that is used in the actuarial valuation and the GASB 67 and 74 valuations.



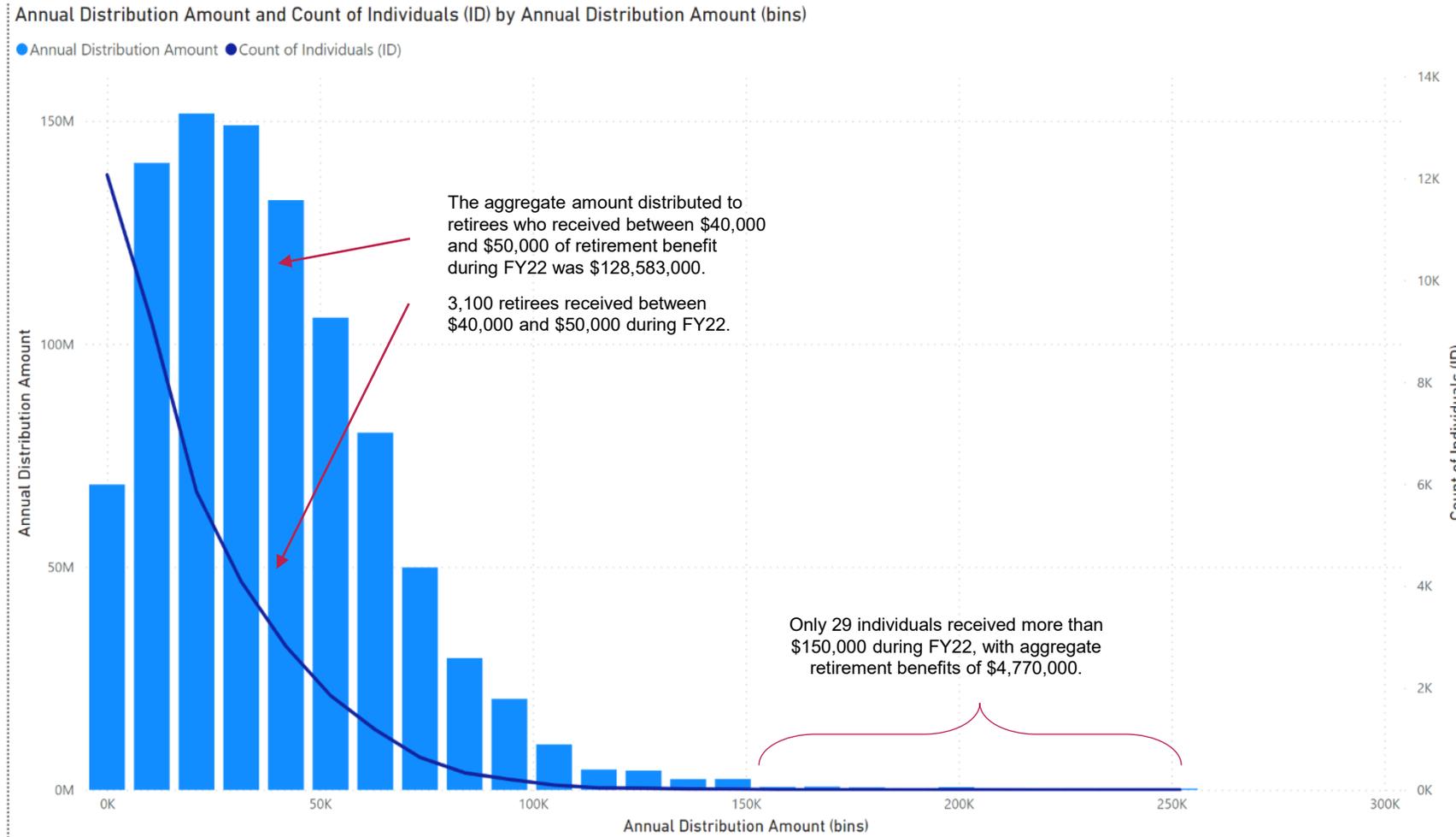
## Census Data Visualization - Matched Records





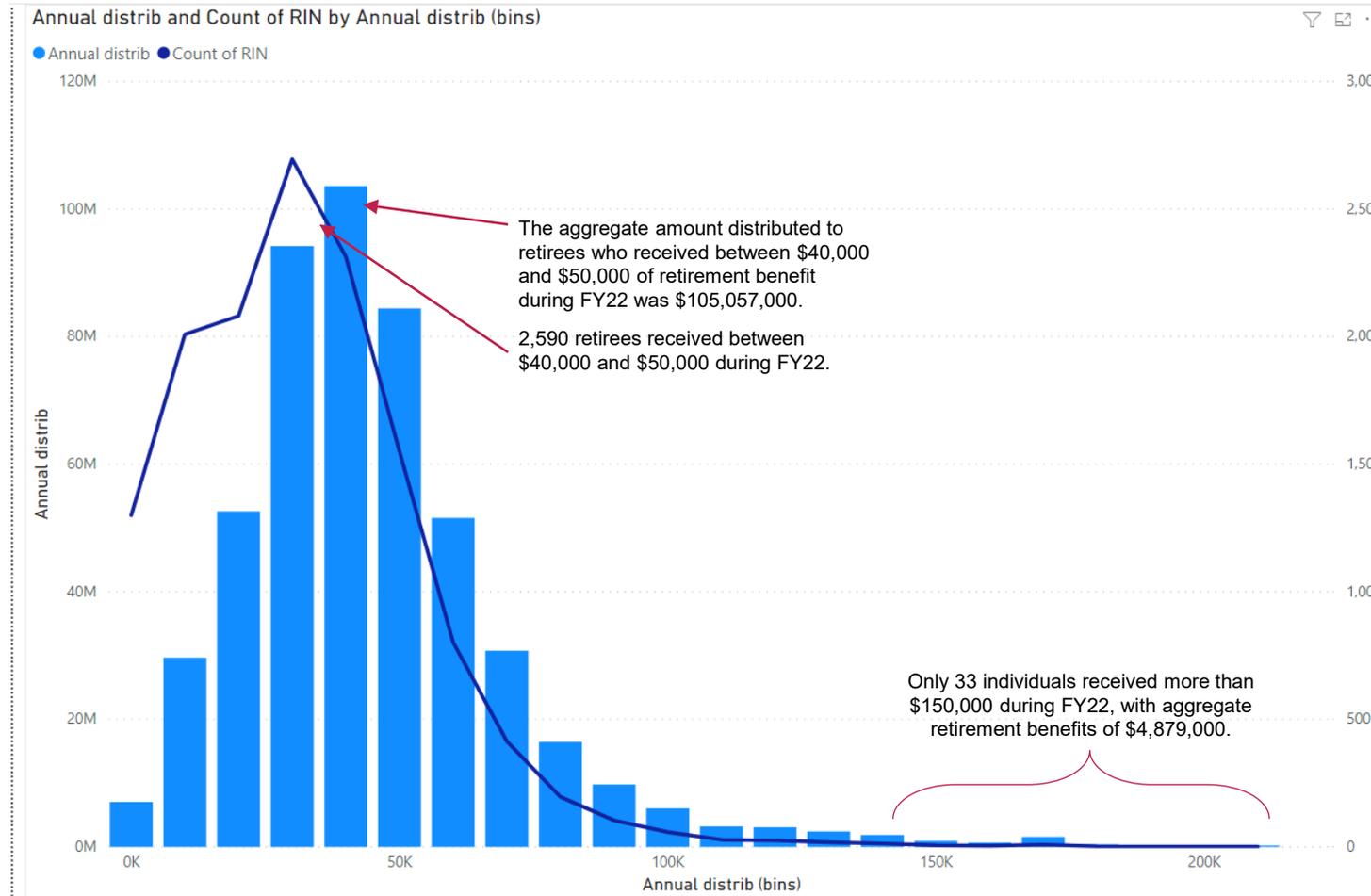
# Pension plan benefit insights - PERS

The distribution information on the following pages reflect System retirement benefit payments, distributed by the amount an individual beneficiary received on an annual basis. The bars represent the total dollars distributed by range (for example, individuals who received less than \$10,000, between \$10,000 and \$20,000, between \$20,000 and \$30,000). The line represents the number of individuals who received annual benefit payments within that range.





# Pension plan benefit insights - TRS





# Questions?

For additional information and audit committee resources, including National Audit Committee Peer Exchange series, a Quarterly webcast, and suggested publications, visit the KPMG Audit Committee Institute (ACI) at [www.kpmg.com/ACI](http://www.kpmg.com/ACI)

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# **ALASKA RETIREMENT MANAGEMENT BOARD**

## **STAFF REPORT**

### **Disclosure – Communications – Calendar Update December 1, 2022**

The 3<sup>rd</sup> Quarter Disclosure Memorandum is included in the packet; no disclosure transactions require additional review or discussion.

The Communications Memorandum lists communications directed to and sent on behalf of the Board since the September 15-16, Board of Trustees meeting, and a summary of public records requests received between September 1 and November 15, 2022.

The 2023 meeting calendar approved by the Board at the June meeting is also attached.

Additionally, a timeline showing contract and review deadlines for FY2023 through FY2028 is included for trustee reference.

**ALASKA RETIREMENT MANAGEMENT BOARD  
M E M O R A N D U M**

To: ARMB Trustees  
From: Alysia Jones  
Date: November 11, 2022  
Subject: Financial Disclosures

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As required by AS 37.10.230 and Alaska Retirement Management Board policy relating to investment conduct and reporting, trustees and staff must disclose certain financial interests. We are hereby submitting to you a list of disclosures for individual transactions made by trustees and staff.

**3rd Quarter July 1, 2022 – September 30, 2022**

<b>Name</b>	<b>Position Title</b>	<b>Disclosure Type</b>	<b>Disclosure Date</b>
Donald Krohn	ARMB Trustee	Equities/ Options	10/07/2022
Allen Hippler	ARMB Trustee	Equities	10/04/2022
Charles Casey Colton	State Investment Officer	Equities	09/30/2022
Hunter Romberg	Senior Investment Compliance Officer	Equities	10/15/2022

**ALASKA RETIREMENT MANAGEMENT BOARD  
M E M O R A N D U M**

To: ARMB Trustees  
From: Alysia Jones  
Date: 11/15/2022  
Subject: Communications & Information Requests

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**Communications to Trustees**

The following is a list of communications directed to the Board, that were received since the September 15-16, 2022 Board of Trustees meeting.

Name	Type	Date	Topic
Linda (No surname provided)	Email	10/30/2022	Empower service experience
Tom Klaameyer, NEA-Alaska	Email	11/07/2022	Empower service experience

**Communications Sent on behalf of the Board**

There are no communications to report.

**Public Records Requests**

*From September 1 – November 15, 2022*

Topics	# of Requests	Description
Investment Portfolio	9	Quarterly performance data, proxy voting records
Meeting Materials	5	Summary of Board Actions
Policies & Guidelines	3	Investment management, watchlist, proxy voting

**ALASKA RETIREMENT MANAGEMENT BOARD  
2023 Meeting Calendar**

DATE	LOCATION	DESCRIPTION
March 15 Wednesday	Juneau, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
<b>March 16-17 Thursday-Friday</b>	<b>Juneau, AK</b>	<b>Board of Trustees Meeting:</b> <i>Performance Measurement – 4<sup>th</sup> Quarter</i> <i>Buck Draft Actuarial Report/GRS Draft Actuary Certification</i> <i>Capital Markets – Asset Allocation</i> <i>Manager Presentations</i>
April 27* Thursday	Videoconference	Actuarial Committee <i>Follow-up/additional discussion/questions on valuations</i>
<b>April 28* Friday</b>	<b>Videoconference</b>	<b>Board of Trustees Meeting</b>
June 14 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
<b>June 15-16 Thursday - Friday</b>	<b>Anchorage, AK</b>	<b>Board of Trustees Meeting:</b> <i>Final Actuary Reports/Adopt Valuation</i> <i>Adopt Asset Allocation</i> <i>Performance Measurement - 1st Quarter</i> <i>Manager Presentations</i>
September 13 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
<b>September 14-15 Thursday - Friday</b>	<b>Anchorage, AK</b>	<b>Board of Trustees Meeting:</b> <i>Set Contribution Rates</i> <i>Audit Results/Assets – Auditor</i> <i>Approve Budget</i> <i>Performance Measurement – 2nd Quarter</i> <i>Real Estate Annual Plan</i> <i>Real Assets Evaluation – Callan LLC</i> <i>Manager Presentations</i>
October 10 Tuesday ( <i>placeholder</i> )	Videoconference	Audit Committee
December 6 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
<b>December 7-8 Thursday-Friday</b>	<b>Anchorage, AK</b>	<b>Board of Trustees Meeting:</b> <i>Audit Report - DRB Auditor</i> <i>Performance Measurement – 3rd Quarter</i> <i>Manager Review (Questionnaire)</i> <i>Private Equity Evaluation - Callan LLC</i> <i>Review Private Equity Annual Plan</i> <i>Cybersecurity</i> <i>Manager Presentations</i>

**NOTE: Meeting locations and topics are subject to change.**

\*Meetings to be held as necessary

Approved 6/16/2022

ARMB Timeline of Contract and Review Deadlines FY2023 - FY2028

FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
<b>Trustee Appointments/ Nominations for Terms Ending 3/01/2023</b> <i>Finance Officer - L. Bretz</i> <i>Public - A. Hippler</i>	<b>Trustee Appointments/ Nominations for Terms Ending 3/01/2024</b> <i>Public - D. Krohn</i> <i>PERS - D. Moen</i> <i>TRS - B. Williams</i>		<b>Trustee Appointments/ Nominations for Terms Ending 3/01/2026</b> <i>PERS - M. Williams</i> <i>TRS - S. Ryan</i>	<b>Trustee Appointments/ Nominations for Terms Ending 3/01/2027</b> <i>Finance Officer - TBD</i> <i>Public - TBD</i>	<b>Trustee Appointments/ Nominations for Terms Ending 3/01/2028</b> <i>Public - TBD</i> <i>PERS - TBD</i> <i>TRS - TBD</i>
<b>IAC Appointments</b> <b>Seat 1 - R. Ryerson</b> Reappt. 2.5yr term Effective Date: 1/1/2023 - 6/30/2025 <b>Seat 2 - J. Mitchell</b> Dec 2023 agenda (RFS 3 yr term) Effective Date: 7/01/2023 (FY24) <b>Seat 3 - W. Jennings</b> Dec 2023 agenda (1yr term) Effective Date: 7/01/2023 (FY24)	<b>IAC Appointments</b> <b>Seat 3 - W. Jennings</b> March 2024 agenda Effective Date: 7/01/2024 (FY25)	<b>IAC Appointments</b> <b>Seat 1 - R. Ryerson</b> March 2025 agenda Effective Date: 7/01/2025 (FY26)	<b>IAC Appointments</b> <b>Seat 2 - TBD</b> March 2025 agenda Effective Date: 7/01/2026 (FY27)	<b>IAC Appointments</b> <b>Seat 3 - TBD</b> March 2027 agenda Effective Date: 7/01/2027 (FY28)	<b>IAC Appointments</b> <b>Seat 1 - TBD</b> March 2028 agenda Effective Date: 7/01/2028 (FY29)
<b>Performance Measurement (General) Consultant Contract (TRSY)</b> <i>2nd Renewal Option - Callan LLC</i> March 2023 agenda Effective Date: 7/01/2023 (FY24)	<b>Performance Measurement (General) Consultant Contract (TRSY)</b> <i>RFP - March 2024</i> Effective Date: 7/01/2024 (FY25)			<b>Performance Measurement - General Consultant Contract (TRSY)</b> <i>1st Renewal Option or RFP - TBD</i> March 2027 agenda Effective Date: 7/1/2027 (FY28)	<b>Performance Measurement - General Consultant Contract (TRSY)</b> <i>2nd Renewal Option or RFP - TBD</i> March 2028 agenda Effective Date: 7/1/2028 (FY29)
	<b>Performance Consultant Review (TRSY)</b> AS 37.10.220(a)(11) <i>RFP - March 2024</i> Presentation Sept 2024 (FY25)				<b>Performance Consultant Review (TRSY)</b> AS 37.10.220(a)(11) <i>RFP - March 2028</i> Presentation Sept 2028 (FY29)
<b>Real Assets Consultant Contract (TRSY)</b> <i>2nd Renewal Option -Callan LLC</i> March 2023 agenda Effective Date: 7/01/2023 (FY24)	<b>Real Assets Consultant Contract (TRSY)</b> <i>RFP - March 2024</i> Effective Date: 7/01/2024 (FY25)			<b>Real Assets Consultant Contract</b> <i>1st Renewal Option or RFP - TBD</i> March 2027 agenda Effective Date: 7/1/2027 (FY28)	<b>Real Assets Consultant Contract</b> <i>2nd Renewal Option or RFP - TBD</i> March 2028 agenda Effective Date: 7/1/2028 (FY29)
	<b>Asset Liability Study (TRSY)</b> <i>Recommendation: Every 5 years</i>				
<b>Actuary Contract (DRB)</b> AS 37.10.220(a)(8 & 9) <i>3yr Renewal Option - Buck</i> March 2023 agenda Effective Date: 7/01/2023 (FY24)			<b>Actuary Contract (DRB)</b> AS 37.10.220(a)(8 & 9) <i>2yr Renewal Option - Buck</i> March 2026 agenda Effective Date: 7/01/2026 (FY27)		<b>Actuary Contract (DRB)</b> AS 37.10.220(a)(8 & 9) <i>RFP</i> March 2028 agenda Effective Date: 7/01/2028 (FY29)
		<b>Review Actuary Contract (TRSY)</b> AS 37.10.220(a)(9) <i>2yr Renewal Option</i> March 2025 agenda Effective Date: 7/01/2025 (FY26)		<b>Review Actuary Contract (TRSY)</b> AS 37.10.220(a)(9) <i>2 yr Renewal Option</i> March 2027 agenda Effective Date: 7/01/2027 (FY28)	
		<b>Actuarial Audit RFP (TRSY)</b> AS 37.10.220(a)(10) <i>RFP March 2025</i> Effective Date: 7/01/2025 (FY26)			<b>Actuarial Audit RFP (TRSY)</b> AS 37.10.220(a)(10) <i>2 yr Renewal Option</i> Effective Date: 7/01/2028 (FY29)
<b>Actuarial Valuations</b> AS 37.10.220(a)(8)	<b>Actuarial Valuations</b> AS 37.10.220(a)(8)	<b>Actuarial Valuations</b> AS 37.10.220(a)(8)	<b>Actuarial Valuations</b> AS 37.10.220(a)(8)	<b>Actuarial Valuations</b> AS 37.10.220(a)(8)	
		<b>Actuarial Experience Analysis</b> AS 37.10.220(a)(9)			<b>Actuarial Experience Analysis</b> AS 37.10.220(a)(9)
<b>Recordkeeper RFP (DRB)</b> <i>2 yr Extension Approved - Empower</i> Effective Date: 7/01/2023 (F24)		<b>Recordkeeper RFP (DRB)</b> <i>RFP - Spring 2025</i> Effective Date: 7/01/2025 (FY26)			
	<b>Auditor (DRB)</b> <i>2<sup>nd</sup> Renewal Option - KPMG</i> Effective Date: 7/01/2024 (FY25)				<b>Auditor (DRB)</b> <i>RFP</i> Effective Date: 7/01/2028 (FY29)

Updated: 11/15/2022

# ALASKA RETIREMENT MANAGEMENT BOARD

## STAFF REPORT

### Fund Financials – Cash Flow Report December 1, 2022

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#### **Ryan Kauzlarich, Assistant State Comptroller, Department of Revenue**

As of October 2022 month-end, total plan assets were as follows: PERS - \$21.8 billion, TRS - \$10.2 billion, JRS - \$262.3 million, NGNMRS - \$42.2 million, SBS - \$4.3 billion, DCP - \$1 billion. Total non-participant directed plans totaled \$29.7 billion, and participant-directed plans totaled \$7.9 billion. Total assets were \$37.7 billion.

Year-to-date losses were \$691.3 million, and the plans experienced a net withdrawal of \$412.5 million. Total assets were down 2.85% year-to-date.

Internally managed assets totaled \$14.1 billion.

As of month-end, all plans were within the bands of their asset allocations.

#### **Kevin Worley, Chief Financial Officer, Division of Retirement and Benefits**

Presented is the Division of Retirement and Benefits (DRB) Supplement to the Treasury Division's Financial Report as of October 31, 2022.

DRB's supplement report expands on the ARMB Financial Report column "Net Contributions (Withdrawals)" located on pages 1 and 2. DRB reports the summary totals of actual employee and employer, State of Alaska, and other revenue items, as well as benefit payments, refunds & disbursements, and combined administrative & investment expenditures. DRB's supplement report presents cash inflows and outflows for the 4-months ended October 31, 2022 (page 1) and for the month of October 2022 (page 2).

Also presented are participant-directed distributions by plan and by type for the 4-month period on page 3. This page includes Tier information on the defined benefit refunds, and vested percentage on defined contribution distributions.

"Notes for the DRB Supplement to the Treasury Report" includes information for the pension and healthcare plans. Additional information regarding other income is also presented on pages 4 and 5.

**ALASKA RETIREMENT MANAGEMENT BOARD  
FINANCIAL REPORT**

As of October 31, 2022

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**Schedule of Investment Income and Changes in Invested Assets by Fund**  
**Fiscal Year-to-Date through October 31, 2022**

	Beginning Invested Assets	Investment Income <sup>(1)</sup>	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income <sup>(2)</sup>
<b><u>Public Employees' Retirement System (PERS)</u></b>						
<b><u>Defined Benefit Plans:</u></b>						
Retirement Trust	\$ 10,837,529,623	\$ (223,065,796)	\$ (155,450,098)	\$ 10,459,013,729	-3.49%	-2.07%
Retirement Health Care Trust	8,933,550,736	(181,117,686)	(156,472,648)	8,595,960,402	-3.78%	-2.05%
Total Defined Benefit Plans	<u>19,771,080,359</u>	<u>(404,183,482)</u>	<u>(311,922,746)</u>	<u>19,054,974,131</u>	-3.62%	-2.06%
<b><u>Defined Contribution Plans:</u></b>						
Participant Directed Retirement	1,797,124,735	(14,367,763)	25,812,554	1,808,569,526	0.64%	-0.79%
Health Reimbursement Arrangement	689,783,476	(14,382,128)	15,625,992	691,027,340	0.18%	-2.06%
Retiree Medical Plan	207,591,164	(4,340,539)	5,514,991	208,765,616	0.57%	-2.06%
Defined Benefit Occupational Death and Disability:						
Public Employees	43,232,741	(906,185)	1,245,861	43,572,417	0.79%	-2.07%
Police and Firefighters	18,163,141	(377,034)	395,544	18,181,651	0.10%	-2.05%
Total Defined Contribution Plans	<u>2,755,895,257</u>	<u>(34,373,649)</u>	<u>48,594,942</u>	<u>2,770,116,550</u>	0.52%	-1.24%
<b>Total PERS</b>	<b><u>22,526,975,616</u></b>	<b><u>(438,557,131)</u></b>	<b><u>(263,327,804)</u></b>	<b><u>21,825,090,681</u></b>	-3.12%	-1.96%
<b><u>Teachers' Retirement System (TRS)</u></b>						
<b><u>Defined Benefit Plans:</u></b>						
Retirement Trust	6,044,974,411	(125,349,871)	(74,811,730)	5,844,812,810	-3.31%	-2.09%
Retirement Health Care Trust	3,414,090,333	(69,470,315)	(47,416,955)	3,297,203,063	-3.42%	-2.05%
Total Defined Benefit Plans	<u>9,459,064,744</u>	<u>(194,820,186)</u>	<u>(122,228,685)</u>	<u>9,142,015,873</u>	-3.35%	-2.07%
<b><u>Defined Contribution Plans:</u></b>						
Participant Directed Retirement	742,357,878	(5,640,310)	4,564,254	741,281,822	-0.14%	-0.76%
Health Reimbursement Arrangement	200,887,593	(4,151,987)	2,968,714	199,704,320	-0.59%	-2.05%
Retiree Medical Plan	66,714,952	(1,379,432)	884,090	66,219,610	-0.74%	-2.05%
Defined Benefit Occupational Death and Disability	6,540,428	(135,078)	76,298	6,481,648	-0.90%	-2.05%
Total Defined Contribution Plans	<u>1,016,500,851</u>	<u>(11,306,807)</u>	<u>8,493,356</u>	<u>1,013,687,400</u>	-0.28%	-1.11%
<b>Total TRS</b>	<b><u>10,475,565,595</u></b>	<b><u>(206,126,993)</u></b>	<b><u>(113,735,329)</u></b>	<b><u>10,155,703,273</u></b>	-3.05%	-1.98%
<b><u>Judicial Retirement System (JRS)</u></b>						
Defined Benefit Plan Retirement Trust	226,351,741	(4,742,451)	1,267,326	222,876,616	-1.54%	-2.09%
Defined Benefit Retirement Health Care Trust	40,479,282	(831,479)	(182,409)	39,465,394	-2.50%	-2.06%
<b>Total JRS</b>	<b><u>266,831,023</u></b>	<b><u>(5,573,930)</u></b>	<b><u>1,084,917</u></b>	<b><u>262,342,010</u></b>	-1.68%	-2.08%
<b><u>National Guard/Naval Militia Retirement System (MRS)</u></b>						
Defined Benefit Plan Retirement Trust	44,237,906	(1,212,623)	(799,845)	42,225,438	-4.55%	-2.77%
<b><u>Other Participant Directed Plans</u></b>						
Supplemental Annuity Plan	4,412,830,900	(42,683,287)	(27,006,520)	4,343,141,093	-1.58%	-0.97%
Deferred Compensation Plan	1,052,309,932	2,849,118	(8,723,149)	1,046,435,901	-0.56%	0.27%
<b>Total All Funds</b>	<b><u>38,778,750,972</u></b>	<b><u>(691,304,846)</u></b>	<b><u>(412,507,730)</u></b>	<b><u>37,674,938,396</u></b>		
Total Non-Participant Directed	30,774,127,527	(631,462,604)	(407,154,869)	29,735,510,054	-3.37%	-2.07%
Total Participant Directed	8,004,623,445	(59,842,242)	(5,352,861)	7,939,428,342	-0.81%	-0.75%
<b>Total All Funds</b>	<b><u>\$ 38,778,750,972</u></b>	<b><u>\$ (691,304,846)</u></b>	<b><u>\$ (412,507,730)</u></b>	<b><u>\$ 37,674,938,396</u></b>	-2.85%	-1.79%

Notes:

(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: <http://treasury.dor.alaska.gov/armb/Reports-and-Policies/Investment-Performance.aspx>

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**Schedule of Investment Income and Changes in Invested Assets by Fund**  
**For the Month Ended October 31, 2022**

	Beginning Invested Assets	Investment Income (1)	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (2)
<b><u>Public Employees' Retirement System (PERS)</u></b>						
<b><u>Defined Benefit Plans:</u></b>						
Retirement Trust	\$ 10,227,325,131	\$ 275,964,395	\$ (44,275,797)	\$ 10,459,013,729	2.27%	2.70%
Retirement Health Care Trust	8,410,032,827	228,420,695	(42,493,120)	8,595,960,402	2.21%	2.72%
Total Defined Benefit Plans	<u>18,637,357,958</u>	<u>504,385,090</u>	<u>(86,768,917)</u>	<u>19,054,974,131</u>	2.24%	2.71%
<b><u>Defined Contribution Plans:</u></b>						
Participant Directed Retirement	1,719,612,671	81,702,559	7,254,296	1,808,569,526	5.17%	4.74%
Health Reimbursement Arrangement	668,461,402	18,256,035	4,309,903	691,027,340	3.38%	2.72%
Retiree Medical Plan	201,754,481	5,512,816	1,498,319	208,765,616	3.48%	2.72%
<b><u>Defined Benefit Occupational Death and Disability:</u></b>						
Public Employees	42,077,812	1,150,018	344,587	43,572,417	3.55%	2.72%
Police and Firefighters	17,593,961	480,677	107,013	18,181,651	3.34%	2.72%
Total Defined Contribution Plans	<u>2,649,500,327</u>	<u>107,102,105</u>	<u>13,514,118</u>	<u>2,770,116,550</u>	4.55%	4.03%
<b>Total PERS</b>	<b><u>21,286,858,285</u></b>	<b><u>611,487,195</u></b>	<b><u>(73,254,799)</u></b>	<b><u>21,825,090,681</u></b>	2.53%	2.88%
<b><u>Teachers' Retirement System (TRS)</u></b>						
<b><u>Defined Benefit Plans:</u></b>						
Retirement Trust	5,730,277,521	154,424,290	(39,889,001)	5,844,812,810	2.00%	2.70%
Retirement Health Care Trust	3,223,429,943	87,582,938	(13,809,818)	3,297,203,063	2.29%	2.72%
Total Defined Benefit Plans	<u>8,953,707,464</u>	<u>242,007,228</u>	<u>(53,698,819)</u>	<u>9,142,015,873</u>	2.10%	2.71%
<b><u>Defined Contribution Plans:</u></b>						
Participant Directed Retirement	702,546,706	34,079,947	4,655,169	741,281,822	5.51%	4.83%
Health Reimbursement Arrangement	193,511,882	5,281,250	911,188	199,704,320	3.20%	2.72%
Retiree Medical Plan	64,198,957	1,751,735	268,918	66,219,610	3.15%	2.72%
Defined Benefit Occupational Death and Disability	6,286,951	171,499	23,198	6,481,648	3.10%	2.72%
Total Defined Contribution Plans	<u>966,544,496</u>	<u>41,284,431</u>	<u>5,858,473</u>	<u>1,013,687,400</u>	4.88%	4.26%
<b>Total TRS</b>	<b><u>9,920,251,960</u></b>	<b><u>283,291,659</u></b>	<b><u>(47,840,346)</u></b>	<b><u>10,155,703,273</u></b>	2.37%	2.86%
<b><u>Judicial Retirement System (JRS)</u></b>						
Defined Benefit Plan Retirement Trust	218,369,250	5,887,855	(1,380,489)	222,876,616	2.06%	2.70%
Defined Benefit Retirement Health Care Trust	38,538,569	1,047,732	(120,907)	39,465,394	2.40%	2.72%
<b>Total JRS</b>	<b><u>256,907,819</u></b>	<b><u>6,935,587</u></b>	<b><u>(1,501,396)</u></b>	<b><u>262,342,010</u></b>	2.12%	2.71%
<b><u>National Guard/Naval Militia Retirement System (MRS)</u></b>						
Defined Benefit Plan Retirement Trust	41,702,987	709,134	(186,683)	42,225,438	1.25%	1.70%
<b><u>Other Participant Directed Plans</u></b>						
Supplemental Annuity Plan	4,195,460,013	153,684,233	(6,003,153)	4,343,141,093	3.52%	3.67%
Deferred Compensation Plan	1,001,965,832	43,837,814	632,255	1,046,435,901	4.44%	4.37%
<b>Total All Funds</b>	<b><u>36,703,146,896</u></b>	<b><u>1,099,945,622</u></b>	<b><u>(128,154,122)</u></b>	<b><u>37,674,938,396</u></b>		
Total Non-Participant Directed	29,083,561,674	786,641,069	(134,692,689)	29,735,510,054	2.24%	2.71%
Total Participant Directed	7,619,585,222	313,304,553	6,538,567	7,939,428,342	4.20%	4.11%
<b>Total All Funds</b>	<b><u>\$ 36,703,146,896</u></b>	<b><u>\$ 1,099,945,622</u></b>	<b><u>\$ (128,154,122)</u></b>	<b><u>\$ 37,674,938,396</u></b>	<b>2.65%</b>	<b>3.00%</b>

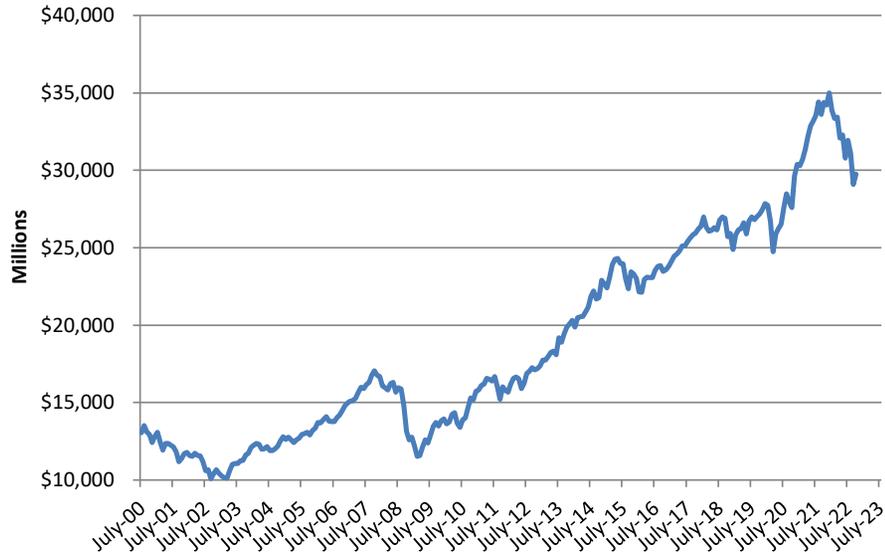
Notes:

(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

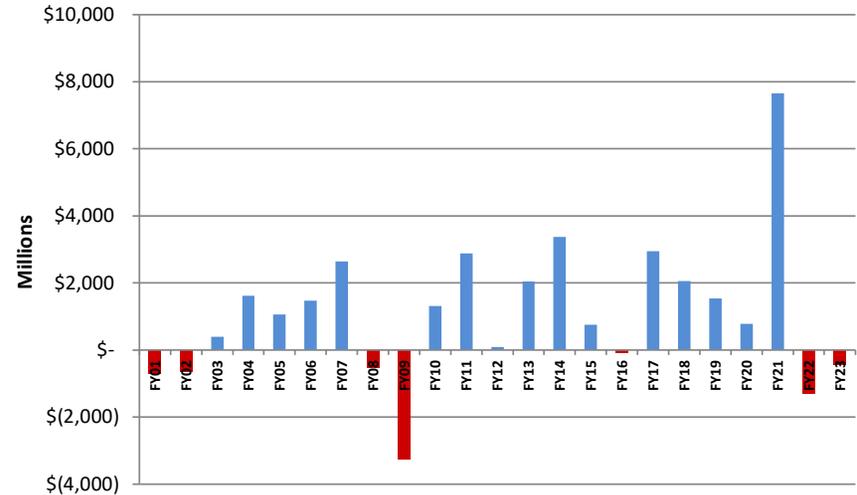
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: <http://treasury.dor.alaska.gov/armb/Reports-and-Policies/Investment-Performance.aspx>

## Total Non Participant Directed Assets As of October 31, 2022

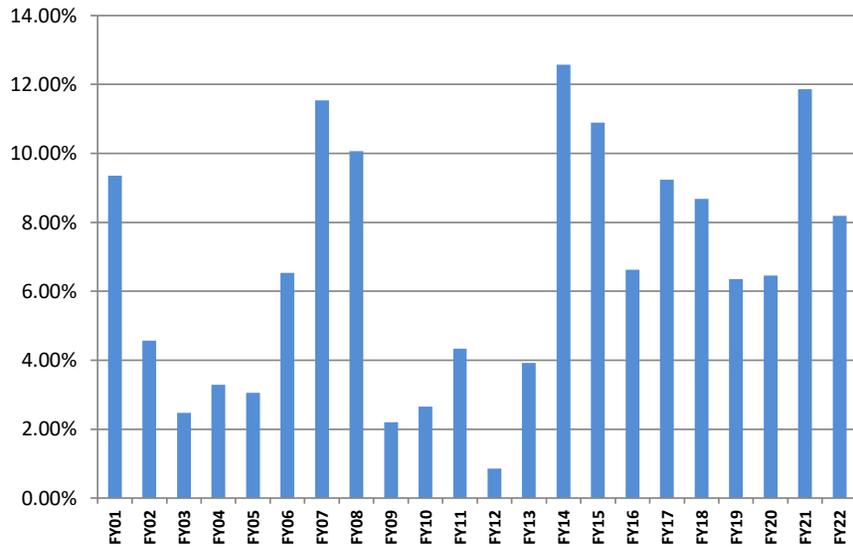
### Total Assets History



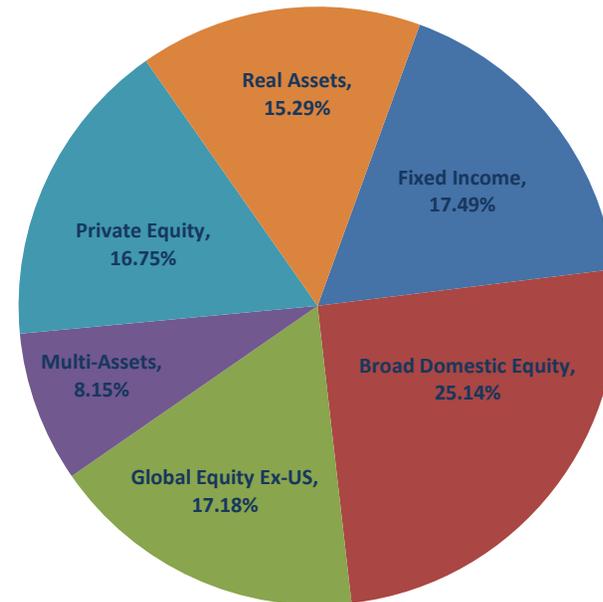
### Income by Fiscal Year



### 5-year Annualized Returns as of Fiscal Year End



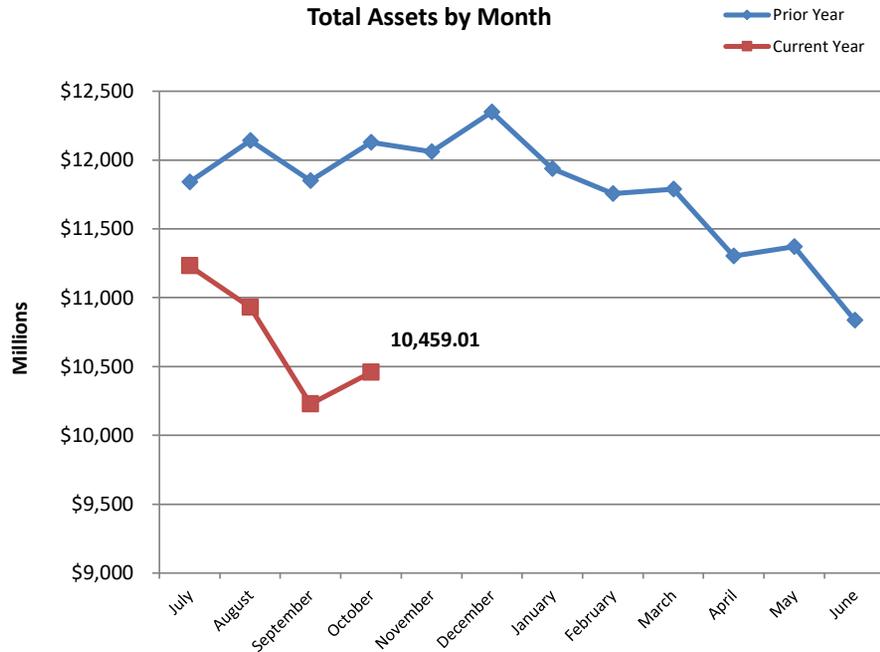
### Actual Asset Allocation



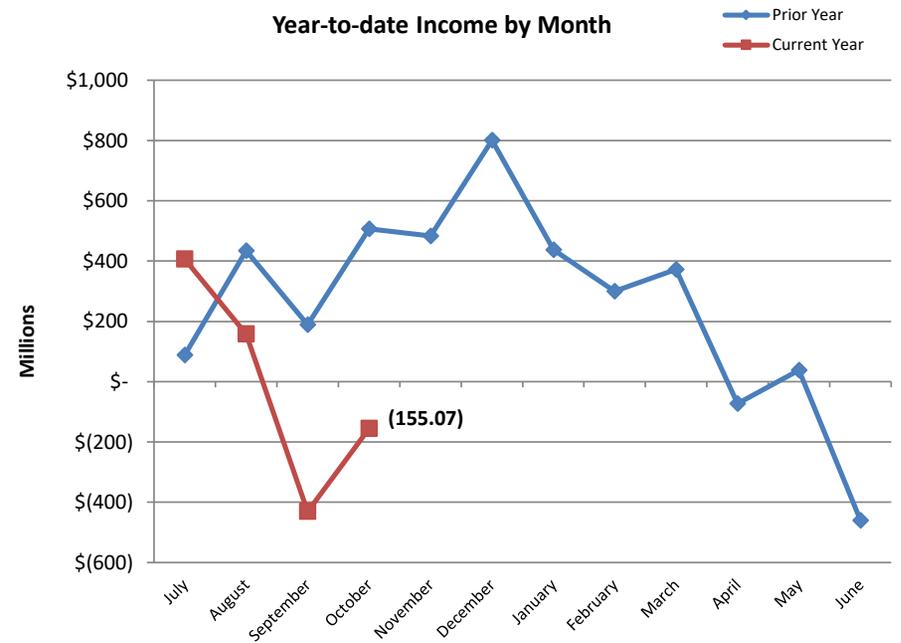
# Public Employees' Retirement Pension Trust Fund

Fiscal Year-to-Date through October 31, 2022

### Total Assets by Month



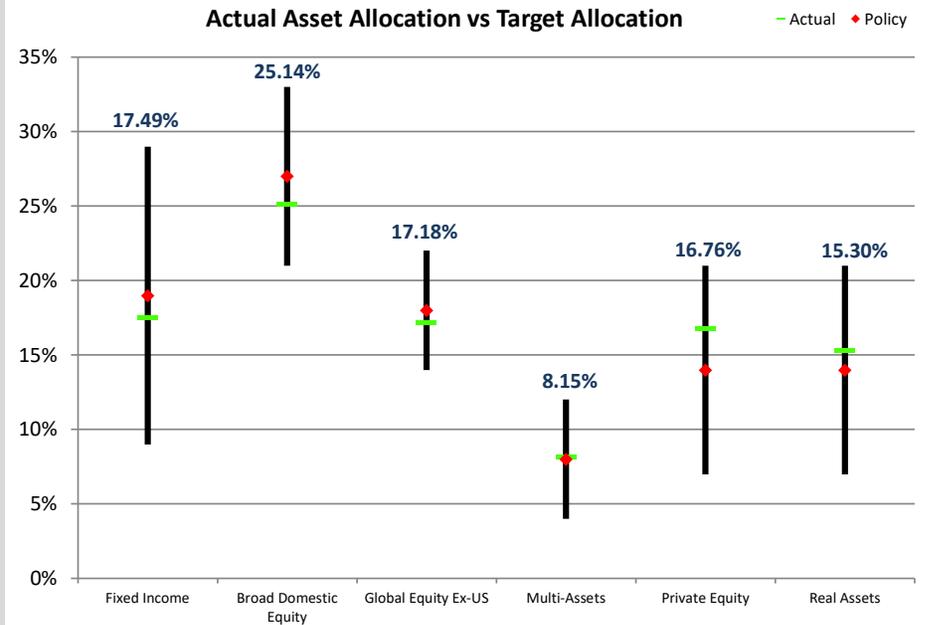
### Year-to-date Income by Month



### Total Assets History

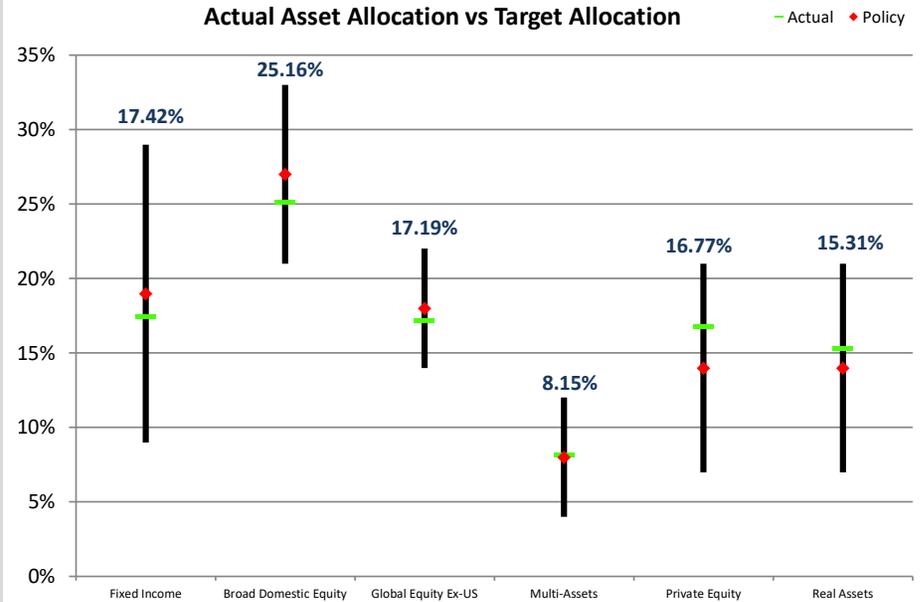
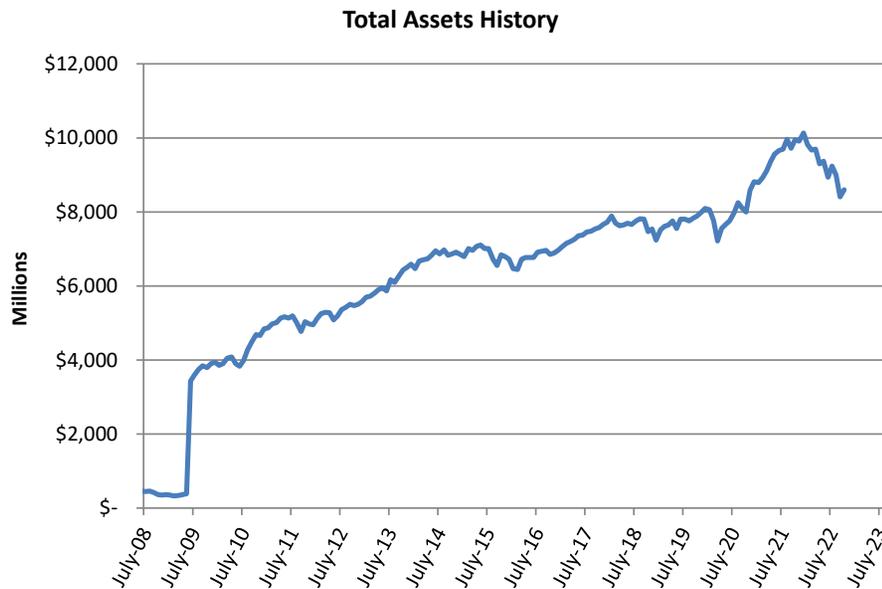
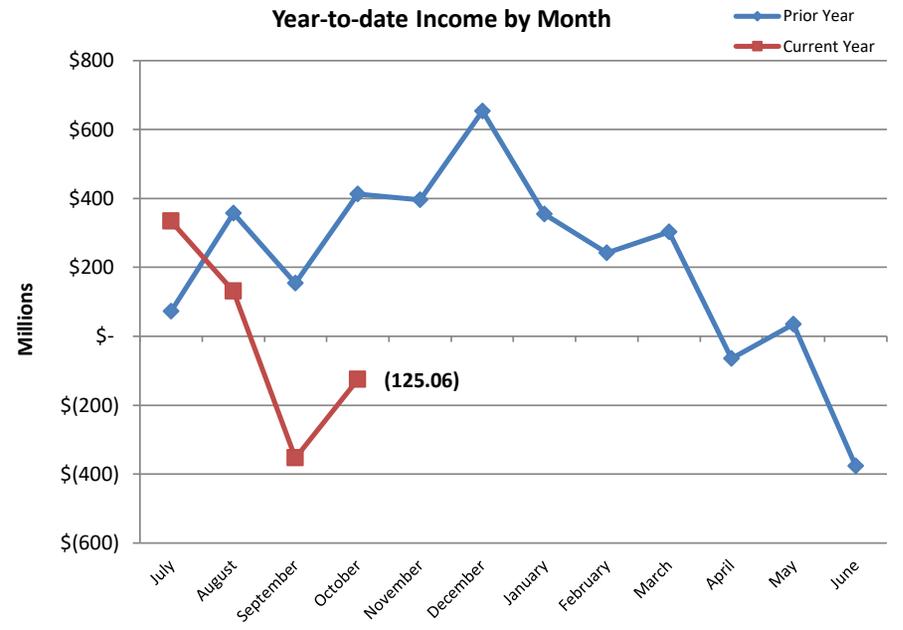
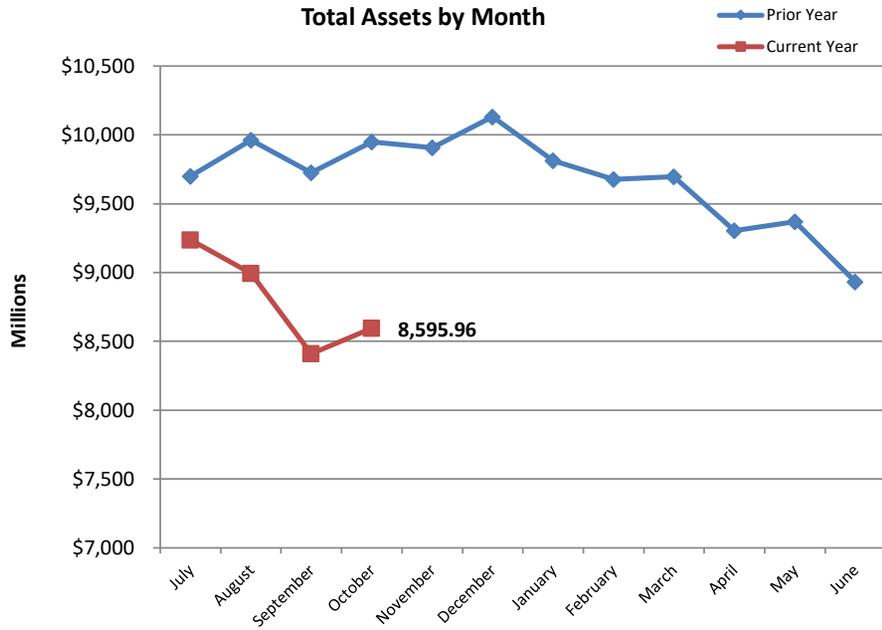


### Actual Asset Allocation vs Target Allocation



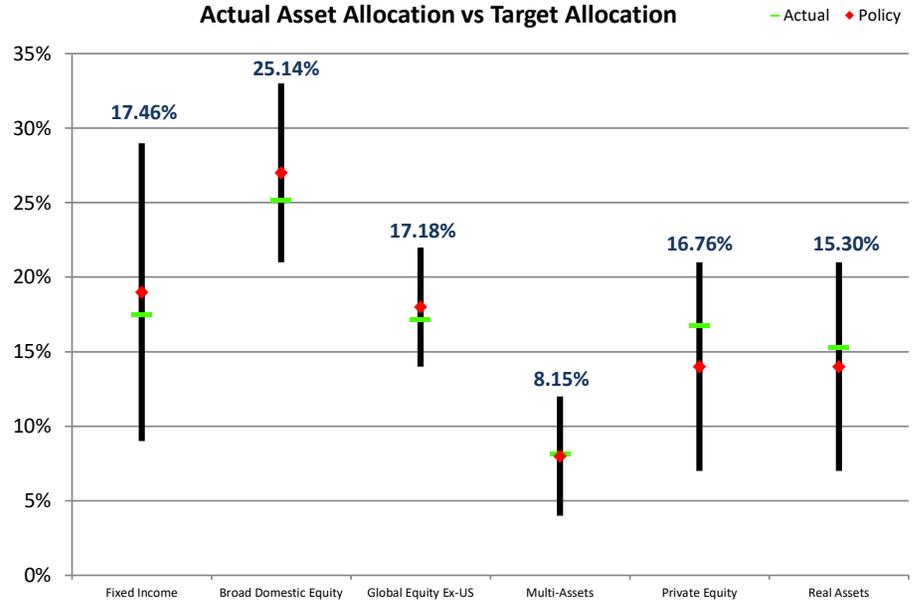
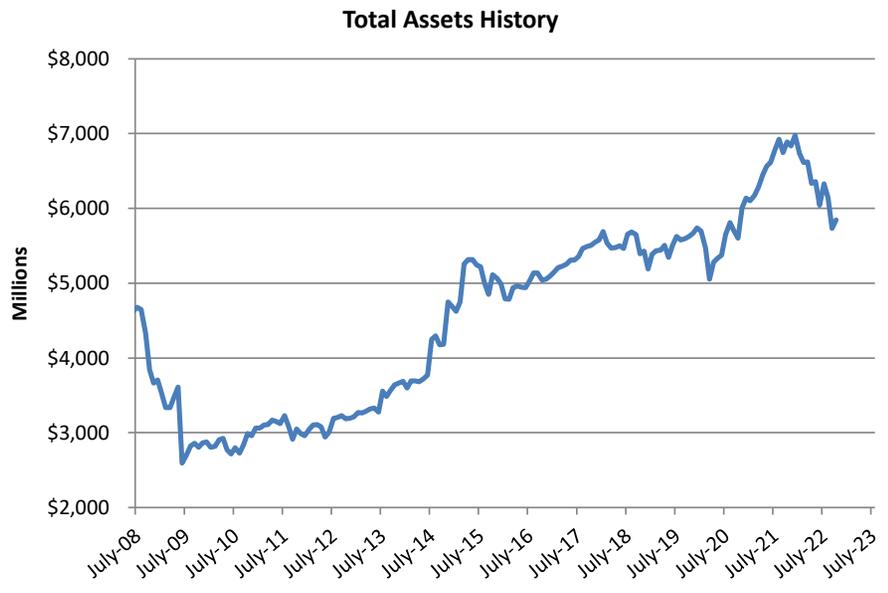
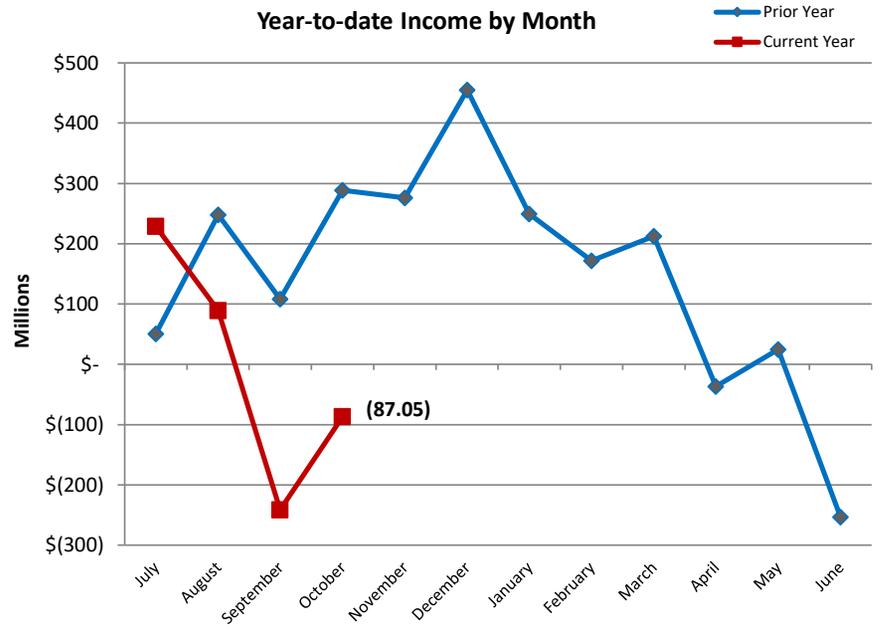
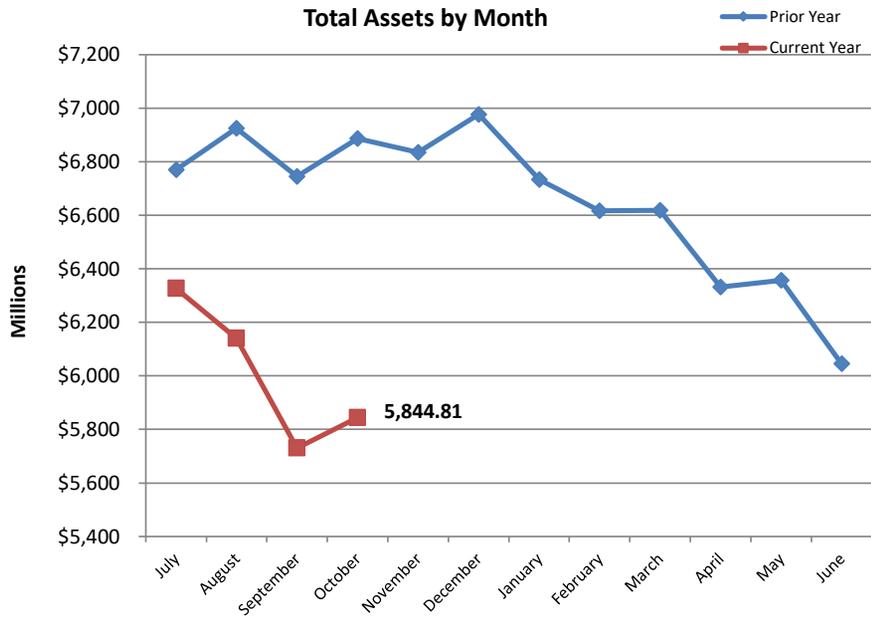
# Public Employees' Retirement Health Care Trust Fund

Fiscal Year-to-Date through October 31, 2022



## Teachers' Retirement Pension Trust Fund

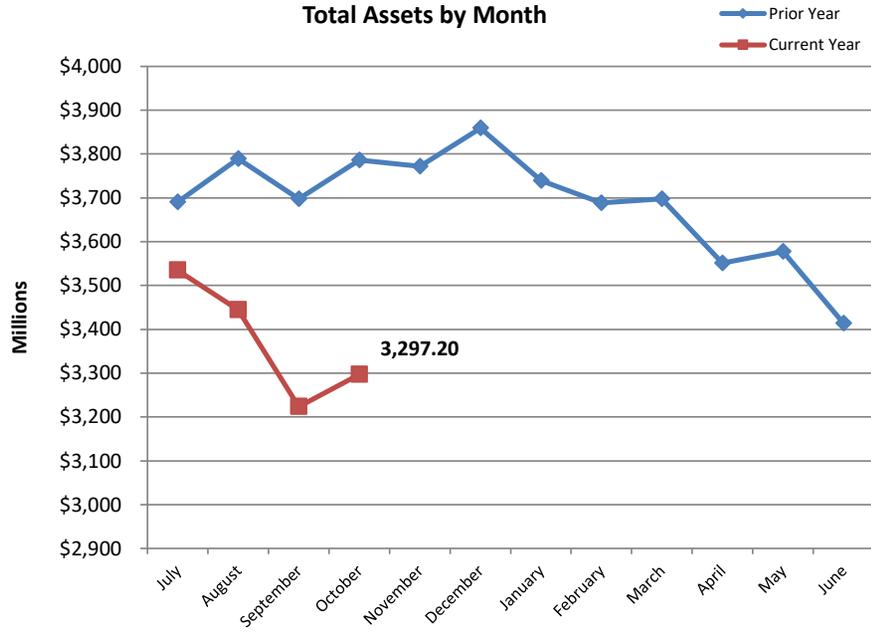
### Fiscal Year-to-Date through October 31, 2022



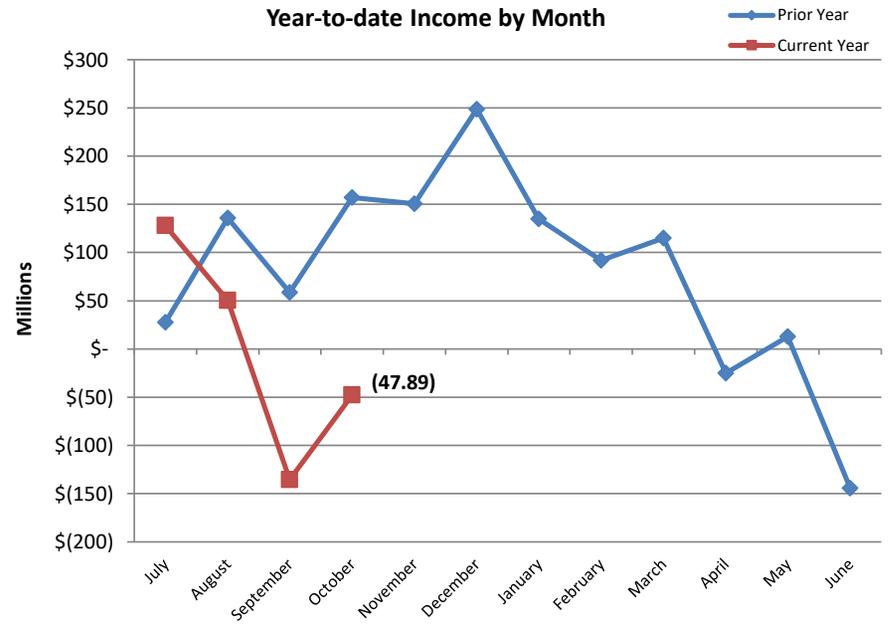
# Teachers' Retirement Health Care Trust Fund

Fiscal Year-to-Date through October 31, 2022

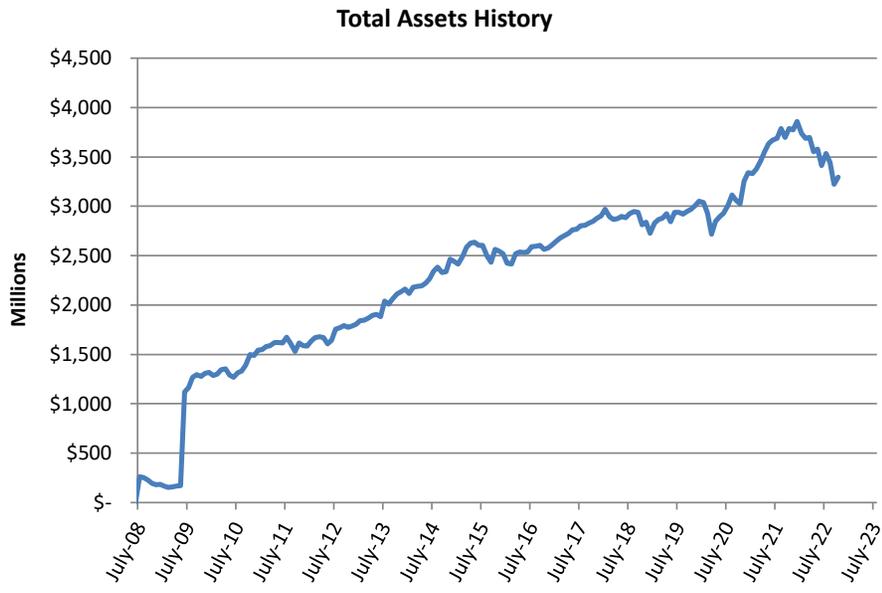
### Total Assets by Month



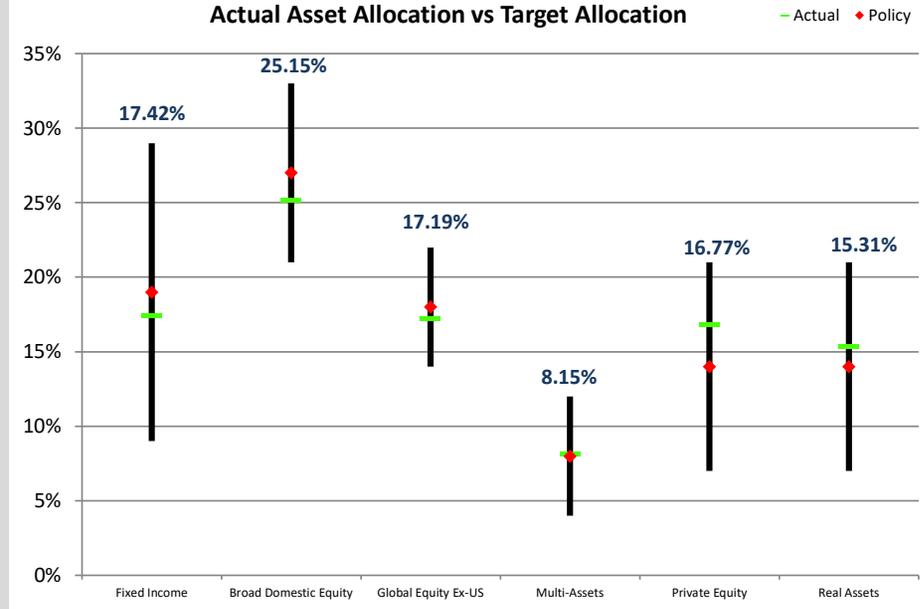
### Year-to-date Income by Month



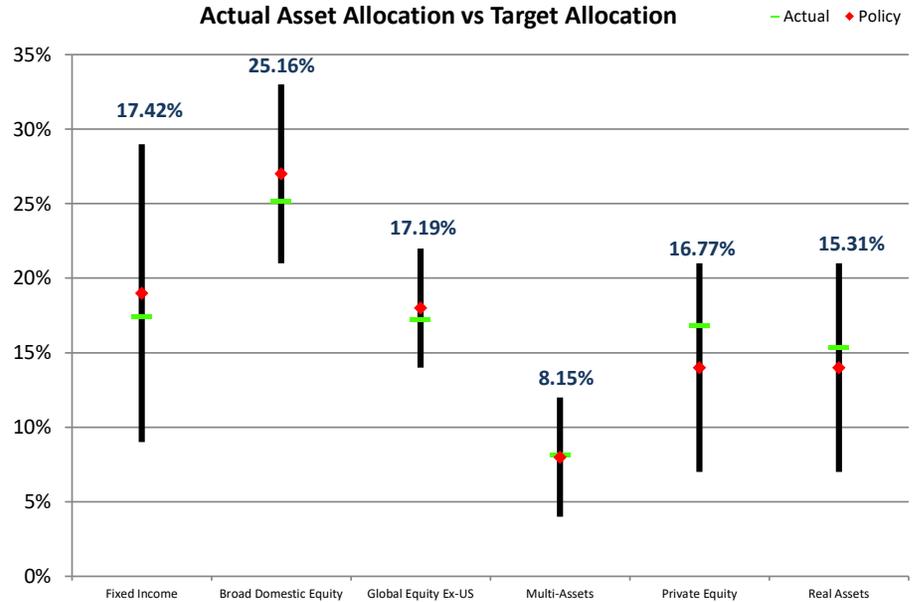
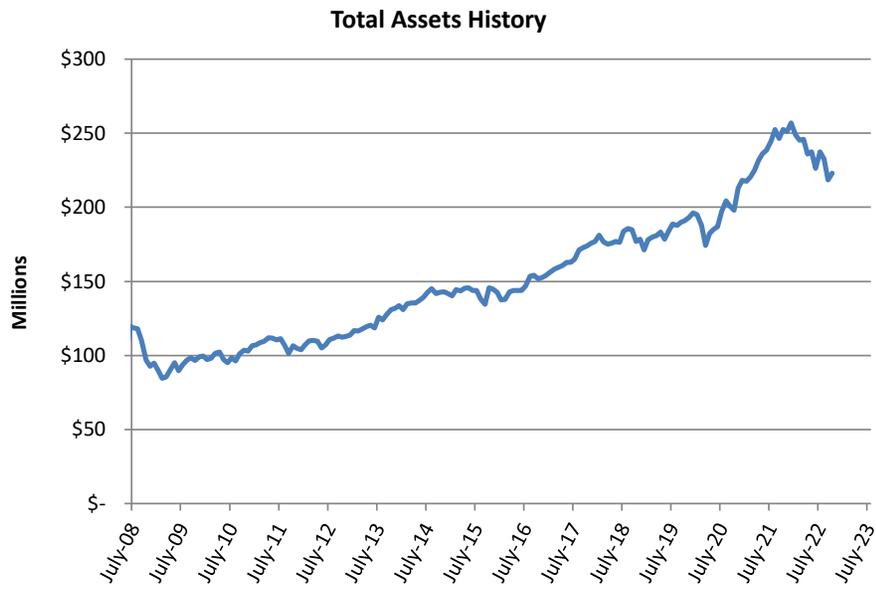
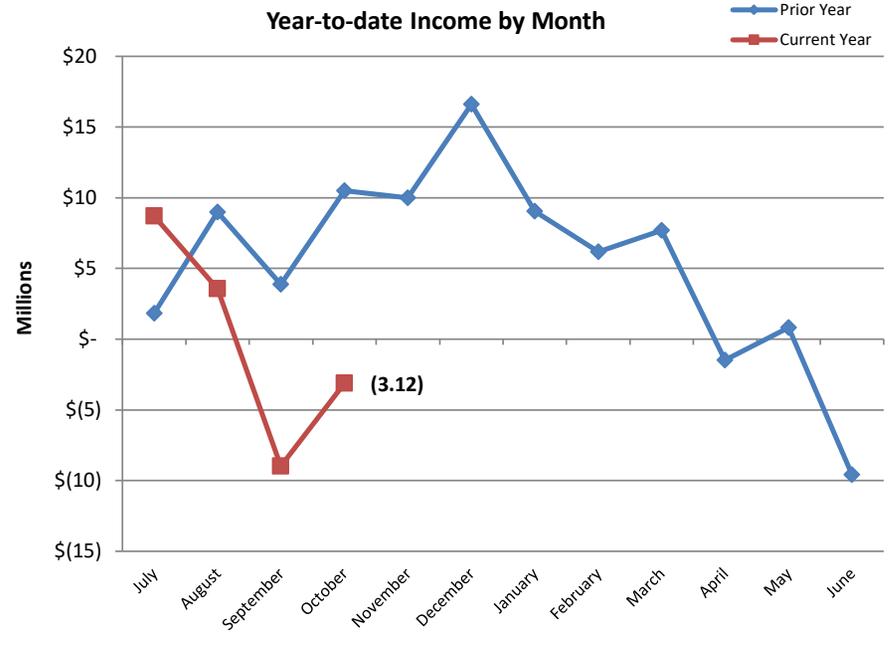
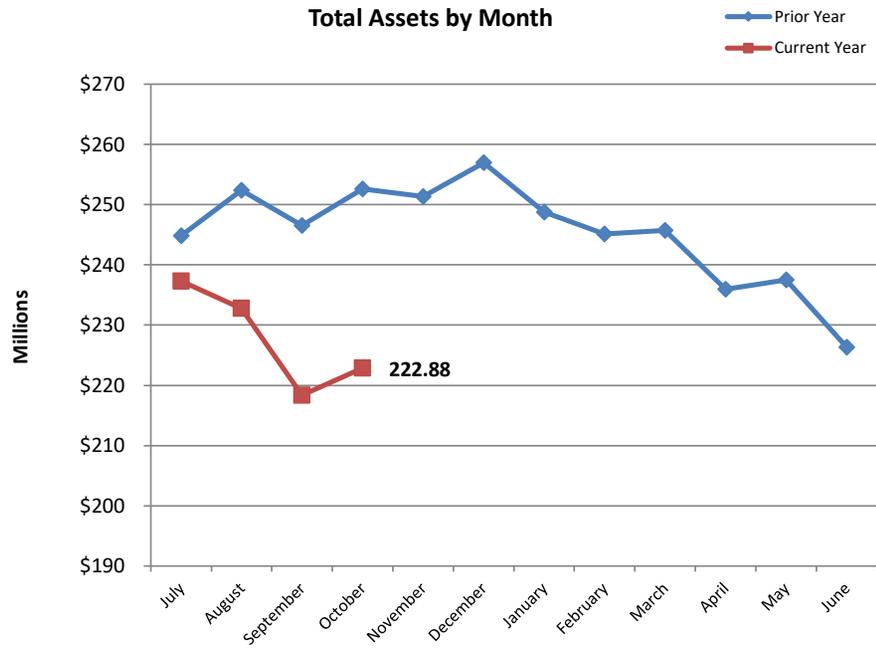
### Total Assets History



### Actual Asset Allocation vs Target Allocation

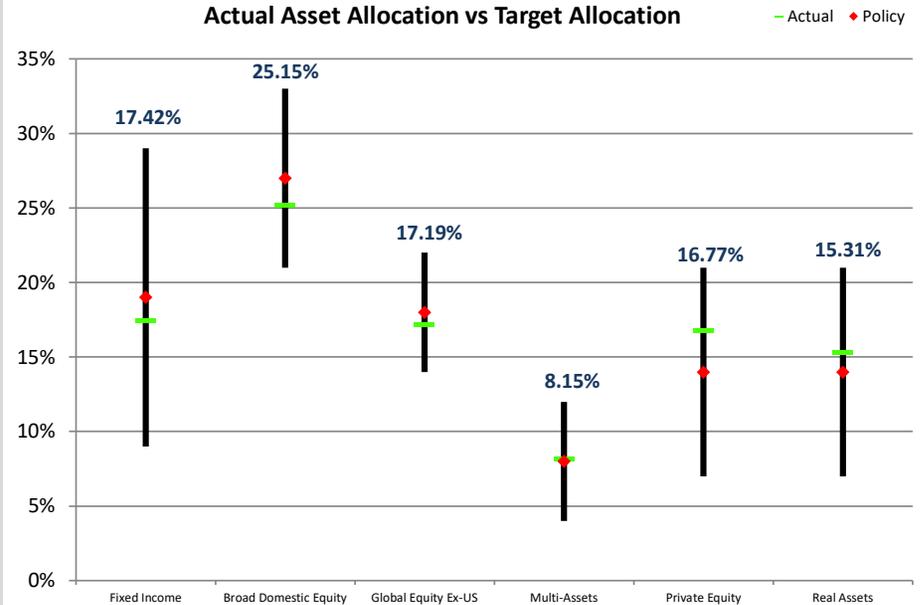
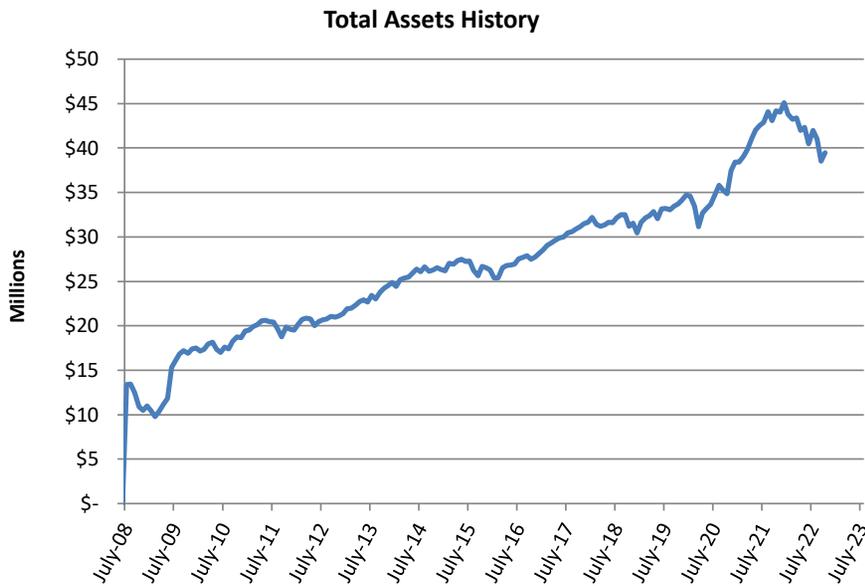
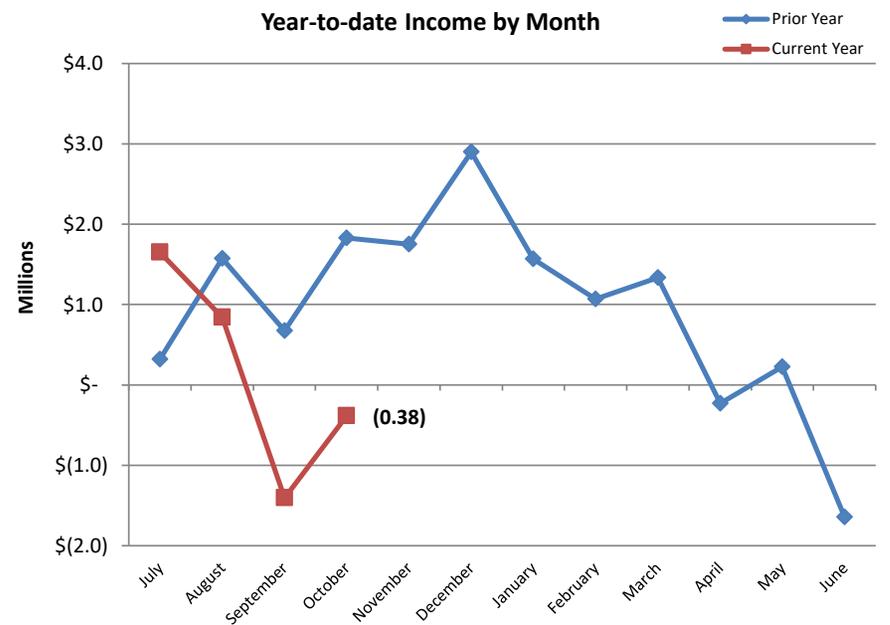
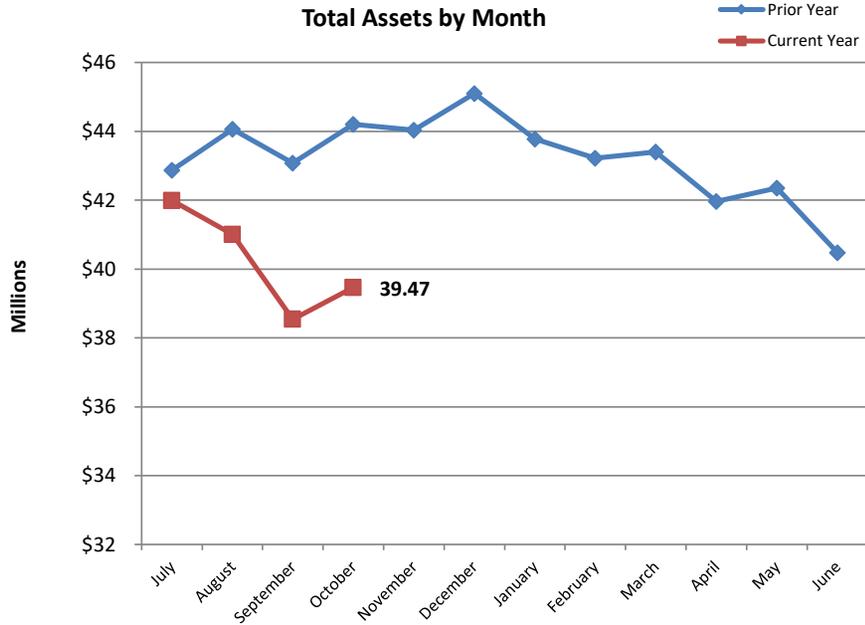


## Judicial Retirement Pension Trust Fund Fiscal Year-to-Date through October 31, 2022



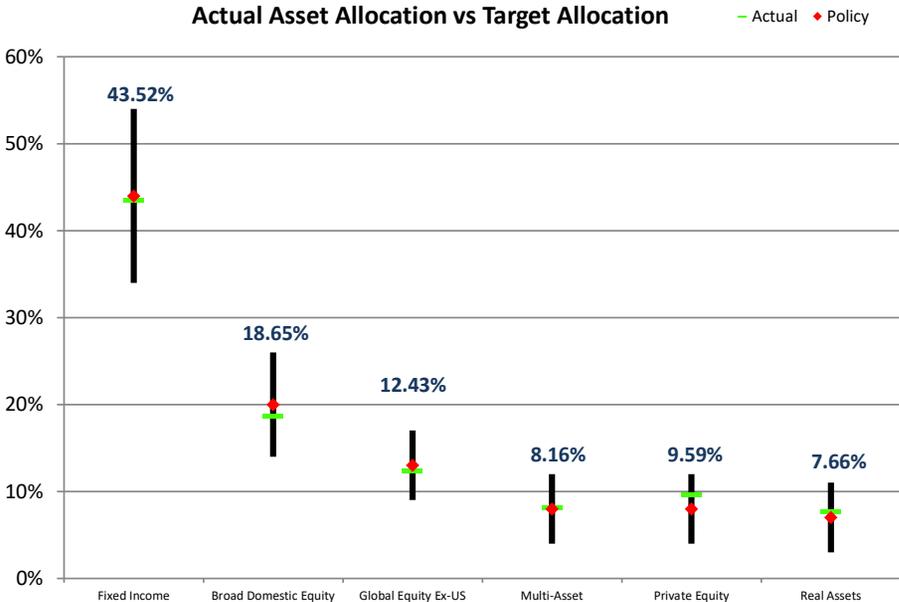
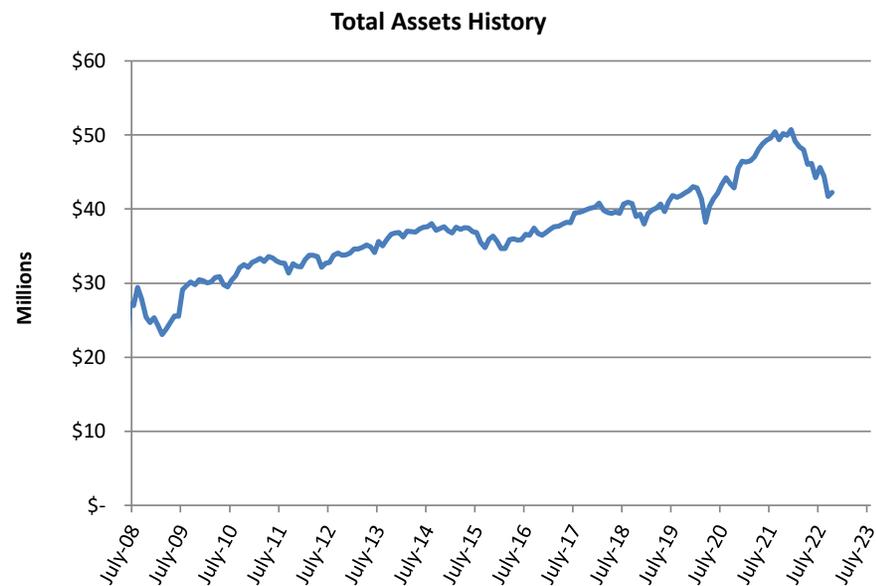
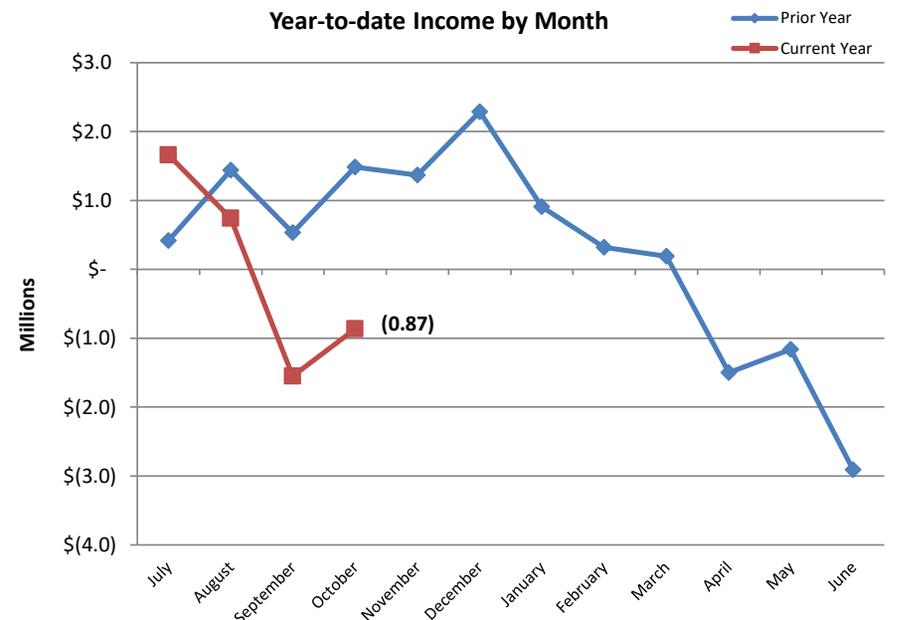
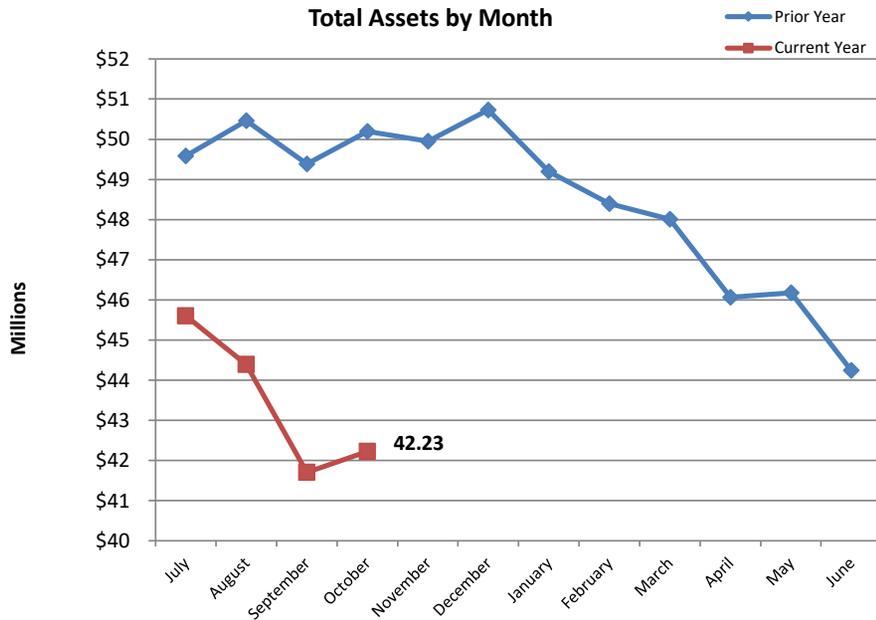
# Judicial Retirement Health Care Trust Fund

Fiscal Year-to-Date through October 31, 2022



## Military Retirement Trust Fund

### Fiscal Year-to-Date through October 31, 2022



# **ALASKA RETIREMENT MANAGEMENT BOARD**

## **Reporting of Funds by Manager**

All Non-Participant Directed Plans

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2022**

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions and (Withdrawals)</u>	<u>Ending Invested Assets</u>	<u>% increase (decrease)</u>	<u>% Change due to Investment Income</u>
<b>Cash</b>						
Short-Term Fixed Income Pool	\$ 286,813,274	\$ 618,687	\$ 20,786,224	\$ 308,218,185	7.46%	0.21%
Securities Lending Income Pool	111,676	31,182	(102,104)	40,754	-63.51%	51.44%
<b>Total Cash</b>	<u>286,924,950</u>	<u>649,869</u>	<u>20,684,120</u>	<u>308,258,939</u>	7.44%	0.22%
<b>Fixed Income</b>						
Fidelity Inst. Asset Mgmt. High Yield CMBS	202,669,657	(2,464,534)	-	200,205,123	-1.22%	-1.22%
Fidelity Institutional Asset Management	816,829,085	(3,164,472)	-	813,664,613	-0.39%	-0.39%
MacKay Shields, LLC	1,117,333	(235,070)	-	882,263	-21.04%	-21.04%
Total Opportunistic Fixed Income	<u>1,020,616,075</u>	<u>(5,864,076)</u>	<u>-</u>	<u>1,014,751,999</u>	-0.57%	-0.57%
ARMB Barclays Agg Bond Fund	4,020,637,400	(52,491,753)	(90,000,000)	3,878,145,647	-3.54%	-1.32%
<b>Total Fixed Income</b>	<u>5,041,253,475</u>	<u>(58,355,829)</u>	<u>(90,000,000)</u>	<u>4,892,897,646</u>	-2.94%	-1.17%
<b>Domestic Equities</b>						
<b>Small Cap</b>						
Passively Managed						
ARMB S&P 600	567,758,079	69,046,960	(9,500,000)	627,305,039	10.49%	12.26%
Total Passive	<u>567,758,079</u>	<u>69,046,960</u>	<u>(9,500,000)</u>	<u>627,305,039</u>	10.49%	12.26%
Actively Managed						
Transition Account	-	-	-	-	-	-
Total Active	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	-	-
<b>Total Small Cap</b>	<u>567,758,079</u>	<u>69,046,960</u>	<u>(9,500,000)</u>	<u>627,305,039</u>	10.49%	12.26%

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2022**

**Large Cap**

Passively Managed						
ARMB S&P 900	4,600,350,121	366,241,184	(150,500,000)	4,816,091,305	4.69%	8.09%
Total Passive	<u>4,600,350,121</u>	<u>366,241,184</u>	<u>(150,500,000)</u>	<u>4,816,091,305</u>	4.69%	8.09%
Actively Managed						
ARMB Domestic Residual Assets	56,748	6,576	-	63,324	11.59%	11.59%
ARMB Large Cap Multi-Factor	845,481,615	68,935,941	-	914,417,556	8.15%	8.15%
ARMB Scientific Beta	1,075,670,331	95,470,775	(54,885,601)	1,116,255,505	3.77%	9.11%
Transition Account	-	20	-	20	-	-
Total Active	<u>1,921,208,694</u>	<u>164,413,312</u>	<u>(54,885,601)</u>	<u>2,030,736,405</u>	5.70%	8.68%
<b>Total Large Cap</b>	<u>6,521,558,815</u>	<u>530,654,496</u>	<u>(205,385,601)</u>	<u>6,846,827,710</u>	4.99%	8.27%
<b>Total Domestic Equity</b>	<u>7,089,316,894</u>	<u>599,701,456</u>	<u>(214,885,601)</u>	<u>7,474,132,749</u>	5.43%	8.59%

**Global Equities**

**Large Cap**

Arrow Street Capital	553,702,202	30,349,364	-	584,051,566	5.48%	5.48%
Baillie Gifford Overseas Limited	376,169,501	3,382,279	428,633	379,980,413	1.01%	0.90%
Brandes Investment Partners	559,781,247	41,988,035	466,353	602,235,635	7.58%	7.50%
Cap Guardian Trust Co	400,789,664	15,547,358	-	416,337,022	3.88%	3.88%
Legal & General	788,030,233	36,336,833	79,695	824,446,761	4.62%	4.61%
ARMB Int'l Residual Assets	2,482,203	81,033	-	2,563,236	3.26%	3.26%
SSgA MSCI World Ex-US IMI Index Fund	1,230,973,927	75,376,524	175,000,000	1,481,350,451	20.34%	5.72%
State Street Global Advisors	-	-	-	-	-	-
<b>Total Large Cap</b>	<u>3,911,928,977</u>	<u>203,061,426</u>	<u>175,974,681</u>	<u>4,290,965,084</u>	9.69%	5.08%

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2022**

<b>Emerging Markets Equity</b>							
MSCI Emerging Markets Index Fund	567,284,922	(17,787,135)	-	549,497,787	-3.14%	-3.14%	
Legal & General Sci-Beta Emerging Markets	268,691,317	(855,631)	26,720	267,862,406	-0.31%	-0.32%	
<b>Total Emerging Markets</b>	<b>835,976,239</b>	<b>(18,642,766)</b>	<b>26,720</b>	<b>817,360,193</b>	<b>-2.23%</b>	<b>-2.23%</b>	
<b>Total Global Equities</b>	<b>4,747,905,216</b>	<b>184,418,660</b>	<b>176,001,401</b>	<b>5,108,325,277</b>	<b>7.59%</b>	<b>3.81%</b>	
<b>Multi-Asset</b>							
<b>Alternative Equity Strategy</b>							
Alternative Equity Strategies Transition Account	-	-	-	-	-	-	
McKinley Global Health Care	291,864,996	17,149,082	391,002	309,405,080	6.01%	5.87%	
<b>Total Alternative Equity Strategy</b>	<b>291,864,996</b>	<b>17,149,082</b>	<b>391,002</b>	<b>309,405,080</b>	<b>6.01%</b>	<b>5.87%</b>	
<b>Alternative Fixed Income</b>							
Crestline Investors, Inc.	692,489,320	3,807,434	2,327,773	698,624,527	0.89%	0.55%	
Prisma Capital Partners	51,364,101	(2,164,380)	-	49,199,721	-4.21%	-4.21%	
Crestline Specialty Fund	5,016,042	-	-	5,016,042	-	-	
Crestline Specialty Lending Fund II	44,540,634	-	(5,766,632)	38,774,002	-12.95%	-	
Crestline Specialty Lending Fund III	49,098,398	-	-	49,098,398	-	-	
<b>Total Alternative Fixed Income</b>	<b>842,508,495</b>	<b>1,643,054</b>	<b>(3,438,859)</b>	<b>840,712,690</b>	<b>-0.21%</b>	<b>0.20%</b>	
<b>Alternative Beta</b>							
Man Group Alternative Risk Premia	282,561,193	9,062,350	-	291,623,543	3.21%	3.21%	
<b>Total Alternative Beta</b>	<b>282,561,193</b>	<b>9,062,350</b>	<b>-</b>	<b>291,623,543</b>	<b>3.21%</b>	<b>3.21%</b>	
<b>Other Opportunities</b>							
Schroders Insurance Linked Securities	1,967,667	99,302	-	2,066,969	5.05%	5.05%	
<b>Total Other Opportunities</b>	<b>1,967,667</b>	<b>99,302</b>	<b>-</b>	<b>2,066,969</b>	<b>5.05%</b>	<b>5.05%</b>	
<b>Tactical Allocation Strategies</b>							
Fidelity Signals	472,041,750	17,222,779	-	489,264,529	3.65%	3.65%	
PineBridge	489,550,103	623,462	-	490,173,565	0.13%	0.13%	
<b>Total Tactical Allocation Strategies</b>	<b>961,591,853</b>	<b>17,846,241</b>	<b>-</b>	<b>979,438,094</b>	<b>1.86%</b>	<b>1.86%</b>	
<b>Total Multi-Asset</b>	<b>2,380,494,204</b>	<b>45,800,029</b>	<b>(3,047,857)</b>	<b>2,423,246,376</b>	<b>1.80%</b>	<b>1.93%</b>	

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2022**

**Private Equity**

Abbott Capital	1,978,738,468	1,541,644	(9,070,668)	1,971,209,444	-0.38%	0.08%
Advent International GPE Fund VIII-B	29,906,752	-	-	29,906,752	-	-
Advent International GPE Fund IX	41,806,060	-	-	41,806,060	-	-
Advent International GPE Fund X	1,750,000	-	-	1,750,000	-	-
Battery Ventures XIV	866,971	-	-	866,971	-	-
Clearlake Capital Partners VI	43,368,008	-	-	43,368,008	-	-
Clearlake Capital Partners VII	16,562,390	-	-	16,562,390	-	-
Dyal Capital Partners III	41,315,430	-	-	41,315,430	-	-
Dyal Capital Partners IV	33,665,252	(2,003,305)	-	31,661,947	-5.95%	-5.95%
Genstar X	10,745,113	-	-	10,745,113	-	-
Glendon Opportunities	10,251,182	1	(1,620,476)	8,630,707	-15.81%	0.00%
Glendon Opportunities II	81,613,961	-	-	81,613,961	-	-
Insight XII	19,934,784	-	-	19,934,784	-	-
KKR Lending Partners II	9,673,559	-	-	9,673,559	-	-
Lexington Capital Partners VIII	34,475,255	-	(271,382)	34,203,873	-0.79%	-
Lexington Partners VII	11,314,473	-	(73,782)	11,240,691	-0.65%	-
Merit Capital Partners	9,077,055	-	(1,621,501)	7,455,554	-17.86%	-
NB SOF III	13,338,925	-	-	13,338,925	-	-
NB SOF IV	36,702,181	-	-	36,702,181	-	-
Neuberger Berman Secondary Opportunities Fund V	11,291,041	-	-	11,291,041	-	-
New Mountain Partners IV	9,331,021	-	-	9,331,021	-	-
New Mountain Partners V	70,370,751	-	-	70,370,751	-	-
New Mountain Partners VI	25,589,146	-	-	25,589,146	-	-
NGP XI	39,935,816	-	-	39,935,816	-	-
NGP XII	32,992,929	-	(1,601,657)	31,391,272	-4.85%	-
Onex Partnership III	4,363,952	-	-	4,363,952	-	-
Pathway Capital Management LLC	2,018,079,686	(3,695,926)	(6,802,003)	2,007,581,757	-0.52%	-0.18%
Resolute Fund III	9,364,099	-	(74,696)	9,289,403	-0.80%	-
Resolute Fund IV	71,847,866	-	-	71,847,866	-	-
Resolute Fund V	49,570,328	-	963,759	50,534,087	1.94%	-
Riverside Micro-Cap Fund VI	1,660,487	(556,769)	-	1,103,718	-33.53%	-33.53%
Summit Partners GE IX	60,812,893	-	-	60,812,893	-	-
Summit Partners GE X	32,404,238	-	602,000	33,006,238	1.86%	-
Summit XI	3,101,177	(103,470)	-	2,997,707	-3.34%	-3.34%
Warburg Pincus Global Growth Fund	45,955,910	-	-	45,955,910	-	-
Warburg Pincus X	628,163	-	-	628,163	-	-
Warburg Pincus XI	12,894,753	-	-	12,894,753	-	-
Warburg Pincus XII	81,173,096	-	-	81,173,096	-	-
<b>Total Private Equity</b>	<b>5,006,473,171</b>	<b>(4,817,825)</b>	<b>(19,570,406)</b>	<b>4,982,084,940</b>	<b>-0.49%</b>	<b>-0.10%</b>

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2022**

**Real Assets**

**Farmland**

UBS Farmland Investors LLC	962,243,222	(1)	5,956,213	968,199,434	0.62%	0.00%
<b>Total Farmland</b>	<u>962,243,222</u>	<u>(1)</u>	<u>5,956,213</u>	<u>968,199,434</u>	0.62%	0.00%

**Timber**

Project Pearl	3,385,673	-	-	3,385,673	-	-
Timberland Invt Resource LLC	376,440,434	-	(3,200,000)	373,240,434	-0.85%	-
<b>Total Timber</b>	<u>379,826,107</u>	<u>-</u>	<u>(3,200,000)</u>	<u>376,626,107</u>	-0.84%	-

**Energy**

EIG Energy Fund XIV-A	3,702,844	6,644	-	3,709,488	0.18%	0.18%
EIG Energy Fund XV	8,329,576	(621,338)	-	7,708,238	-7.46%	-7.46%
EIG Energy Fund XVI	52,290,910	(1,131,147)	-	51,159,763	-2.16%	-2.16%
<b>Total Energy</b>	<u>64,323,330</u>	<u>(1,745,841)</u>	<u>-</u>	<u>62,577,489</u>	-2.71%	-2.71%

**REIT**

REIT Transition Account	-	-	-	-	-	-
ARMB REIT	450,549,369	15,242,940	-	465,792,309	3.38%	3.38%
<b>Total REIT</b>	<u>450,549,369</u>	<u>15,242,940</u>	<u>-</u>	<u>465,792,309</u>	3.38%	3.38%

**Infrastructure Private**

IFM Global Infrastructure Fund-Private	649,140,241	1,973,289	-	651,113,530	0.30%	0.30%
JP Morgan Infrastructure Fund-Private	148,137,857	-	-	148,137,857	-	-
<b>Total Infrastructure Private</b>	<u>797,278,098</u>	<u>1,973,289</u>	<u>-</u>	<u>799,251,387</u>	0.25%	0.25%

**Alaska Retirement Management Board**  
**All Non-Participant Directed Plans by Manager**  
**Schedule of Investment Income and Changes in Invested Assets**  
**For the Month Ended October 31, 2022**

**Real Estate**

<b>Core Commingled Accounts</b>						
BlackRock US Core Property Fund	439,194,395	5,748,305	(4,449,426)	440,493,274	0.30%	1.32%
JP Morgan	196,661,079	(2,209,907)	(1,012,777)	193,438,395	-1.64%	-1.13%
UBS Trumbull Property Fund	40,342,756	235,924	(1,131,600)	39,447,080	-2.22%	0.59%
Total Core Commingled	<u>676,198,230</u>	<u>3,774,322</u>	<u>(6,593,803)</u>	<u>673,378,749</u>	-0.42%	0.56%
<b>Core Separate Accounts</b>						
Sentinel Separate Account	314,412,985	-	(781,886)	313,631,099	-0.25%	-
UBS Realty	766,710,913	-	(1,027,872)	765,683,041	-0.13%	-
Total Core Separate	<u>1,081,123,898</u>	<u>-</u>	<u>(1,809,758)</u>	<u>1,079,314,140</u>	-0.17%	-
<b>Non-Core Commingled Accounts</b>						
Almanac Realty Securities V	49,080	-	-	49,080	-	-
Almanac Realty Securities VII	30,380,181	-	-	30,380,181	-	-
Almanac Realty Securities VIII	26,691,955	-	1,674,699	28,366,654	6.27%	-
Almanac Realty Securities IX	6,869,633	-	-	6,869,633	-	-
Clarion Ventures 4	10,435,100	-	-	10,435,100	-	-
Colony Investors VIII, L.P.	75,951	-	-	75,951	-	-
ING Clarion Development Ventures III	373,762	-	-	373,762	-	-
KKR Real Estate Partners Americas L.P.	3,580,908	-	98,303	3,679,211	2.75%	-
KKR Real Estate Partners Americas II	8,881,588	-	-	8,881,588	-	-
KKR Real Estate Partners Americas III	29,191,098	-	-	29,191,098	-	-
Silverpeak Legacy Pension Partners II, L.P.	870,156	-	-	870,156	-	-
Silverpeak Legacy Pension Partners III, L.P.	2,102,524	-	-	2,102,524	-	-
Tishman Speyer Real Estate Venture VI	5,723	-	-	5,723	-	-
Tishman Speyer Real Estate Venture VII	143,851	-	-	143,851	-	-
Total Non-Core Commingled	<u>119,651,510</u>	<u>-</u>	<u>1,773,002</u>	<u>121,424,512</u>	1.48%	-
<b>Total Real Estate</b>	<u>1,876,973,638</u>	<u>3,774,322</u>	<u>(6,630,559)</u>	<u>1,874,117,401</u>	-0.15%	0.20%
<b>Total Real Assets</b>	<u>4,531,193,764</u>	<u>19,244,709</u>	<u>(3,874,346)</u>	<u>4,546,564,127</u>	0.34%	0.42%
<b>Total Assets</b>	<u>\$ 29,083,561,674</u>	<u>\$ 786,641,069</u>	<u>\$ (134,692,689)</u>	<u>\$ 29,735,510,054</u>	2.24%	2.71%

**ALASKA RETIREMENT MANAGEMENT BOARD**

**Reporting of Funds by Manager**

Participant Directed Plans

**Supplemental Annuity Plan**  
**Schedule of Investment Income and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2022**

<b>Participant Options</b>	<b>Beginning Invested Assets</b>	<b>Investment Income</b>	<b>Net Contributions (Withdrawals)</b>	<b>Transfers In (Out)</b>	<b>Ending Invested Assets</b>	<b>% Change in Invested Assets</b>	<b>% Change due to Investment Income (1)</b>
<b>T. Rowe Price</b>							
Stable Value Fund	\$ 512,327,961	\$ 780,380	\$ (4,662,161)	\$ 6,075,739	\$ 514,521,919	0.43%	0.15%
Small Cap Stock Fund	182,471,136	15,652,913	(88,286)	(2,673,723)	195,362,040	7.06%	8.64%
Alaska Balanced Trust	974,481,741	17,532,241	(2,706,998)	(2,094,242)	987,212,742	1.31%	1.80%
Long Term Balanced Fund	657,900,360	23,796,768	(529,303)	1,143,187	682,311,012	3.71%	3.62%
AK Target Date 2010 Trust	8,503,863	192,244	(177,852)	(6,225)	8,512,030	0.10%	2.29%
AK Target Date 2015 Trust	62,453,544	1,643,952	(368,607)	230,833	63,959,722	2.41%	2.64%
AK Target Date 2020 Trust	72,594,151	2,277,622	(87,319)	(432,664)	74,351,790	2.42%	3.15%
AK Target Date 2025 Trust	93,923,554	3,545,593	(31,307)	(596,394)	96,841,446	3.11%	3.79%
AK Target Date 2030 Trust	84,774,717	3,663,282	414,274	(98,450)	88,753,823	4.69%	4.31%
AK Target Date 2035 Trust	84,685,620	4,104,460	594,878	(444,117)	88,940,841	5.02%	4.84%
AK Target Date 2040 Trust	79,255,004	4,203,712	483,061	(402,963)	83,538,814	5.41%	5.30%
AK Target Date 2045 Trust	96,837,287	5,528,648	512,082	(94,879)	102,783,138	6.14%	5.70%
AK Target Date 2050 Trust	106,589,727	6,279,839	693,837	(24,263)	113,539,140	6.52%	5.87%
AK Target Date 2055 Trust	112,867,208	6,654,779	1,360,814	(318,225)	120,564,576	6.82%	5.87%
AK Target Date 2060 Trust	10,002,906	601,474	442,963	(43,434)	11,003,909	10.01%	5.90%
AK Target Date 2065 Trust	4,905,905	292,020	270,032	73,793	5,541,750	12.96%	5.75%
Total Investments with T. Rowe Price	<u>3,144,574,684</u>	<u>96,749,927</u>	<u>(3,879,892)</u>	<u>293,973</u>	<u>3,237,738,692</u>		
<b>JP Morgan</b>							
JPMorgan SmartRetirement Blend 2015 R6	886,889	18,762	1,799	(27)	907,423	2.32%	2.11%
JPMorgan SmartRetirement Blend 2020 R6	111,884	3,875	1,175	80,070	197,004	76.08%	2.54%
Total Investments with JP Morgan	<u>998,773</u>	<u>22,637</u>	<u>2,974</u>	<u>80,043</u>	<u>1,104,427</u>		
<b>State Street Global Advisors</b>							
Money Market	68,834,536	159,615	(626,055)	(78,937)	68,289,159	-0.79%	0.23%
S&P 500 Stock Index	435,710,757	35,373,382	(649,402)	1,893,451	472,328,188	8.40%	8.11%
Russell 3000 Index	105,594,661	8,485,825	134,854	(3,336,602)	110,878,738	5.00%	8.16%
World Equity Ex-US Index	82,780,410	2,878,585	(134,644)	2,094,501	87,618,852	5.84%	3.44%
Total Investments with SSgA	<u>692,920,364</u>	<u>46,897,407</u>	<u>(1,275,247)</u>	<u>572,413</u>	<u>739,114,937</u>		
<b>BlackRock</b>							
Passive U.S. Bond Index Fund	142,948,996	(1,894,735)	(684,068)	3,395,711	143,765,904	0.57%	-1.31%
Strategic Completion Fund	33,898,028	755,359	19,468	(725,047)	33,947,808	0.15%	2.25%
Total Investments with BlackRock	<u>176,847,024</u>	<u>(1,139,376)</u>	<u>(664,600)</u>	<u>2,670,664</u>	<u>177,713,712</u>		
<b>Brandes and Baillie Gifford</b>							
AK International Equity Fund	69,982,087	3,188,379	29,758	(1,480,818)	71,719,406	2.48%	4.60%
<b>Northern Trust</b>							
Environmental, Social, and Governance Fund	110,137,081	7,965,259	(216,146)	(2,136,275)	115,749,919	5.10%	7.31%
<b>Total All Funds</b>	<u>\$ 4,195,460,013</u>	<u>\$ 153,684,233</u>	<u>\$ (6,003,153)</u>	<u>\$ -</u>	<u>\$ 4,343,141,093</u>	3.52%	3.67%

Notes: Source data provided by the record keeper, Empower Retirement.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

**Supplemental Annuity Plan**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2022**  
**\$ (Thousands)**

<u>Invested Assets</u> (at fair value)	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Investments with T. Rowe Price				
Stable Value Fund	\$ 509,583	\$ 504,379	\$ 512,328	\$ 514,522
Small Cap Stock Fund	216,753	208,685	182,471	195,362
Alaska Balanced Trust	1,077,406	1,041,557	974,482	987,213
Long Term Balanced Fund	713,482	699,059	657,900	682,311
AK Target Date 2010 Trust	9,357	9,115	8,504	8,512
AK Target Date 2015 Trust	69,270	66,830	62,454	63,960
AK Target Date 2020 Trust	80,500	77,795	72,594	74,352
AK Target Date 2025 Trust	106,102	102,253	93,924	96,841
AK Target Date 2030 Trust	94,843	91,702	84,775	88,754
AK Target Date 2035 Trust	95,021	92,135	84,686	88,941
AK Target Date 2040 Trust	88,843	86,072	79,255	83,539
AK Target Date 2045 Trust	108,544	105,290	96,837	102,783
AK Target Date 2050 Trust	119,748	115,724	106,590	113,539
AK Target Date 2055 Trust	126,547	122,690	112,867	120,565
AK Target Date 2060 Trust	10,529	10,564	10,003	11,004
AK Target Date 2065 Trust	5,127	5,177	4,906	5,542
Investments with JP Morgan				
JPMorgan SmartRetirement Blend 2015 R6	960	937	887	907
JPMorgan SmartRetirement Blend 2020 R6	141	118	112	197
Investments with State Street Global Advisors				
Money Market	70,250	68,317	68,835	68,289
S&P 500 Stock Index	478,856	471,613	435,711	472,328
Russell 3000 Index	142,583	128,979	105,595	110,879
World Equity Ex-US Index	79,348	85,820	82,780	87,619
Investments with BlackRock				
Passive U.S. Bond Index Fund	142,459	139,488	142,949	143,766
Strategic Completion Fund	39,351	37,780	33,898	33,948
Investments with Brandes and Baillie Gifford				
AK International Equity Fund	97,564	85,972	69,982	71,719
Investments with Northern Trust				
Environmental, Social, and Governance Fund	143,617	129,320	110,137	115,750
<b>Total Invested Assets</b>	<b>\$ 4,626,785</b>	<b>\$ 4,487,371</b>	<b>\$ 4,195,460</b>	<b>\$ 4,343,141</b>
<b>Change in Invested Assets</b>				
Beginning Assets	\$ 4,412,831	\$ 4,626,785	\$ 4,487,371	\$ 4,195,460
Investment Earnings	217,056	(127,697)	(285,727)	153,684
Net Contributions (Withdrawals)	(3,102)	(11,717)	(6,184)	(6,003)
<b>Ending Invested Assets</b>	<b>\$ 4,626,785</b>	<b>\$ 4,487,371</b>	<b>\$ 4,195,460</b>	<b>\$ 4,343,141</b>

Note: Source data provided by the record keeper, Empower Retirement.

**Deferred Compensation Plan**  
**Schedule of Invested Assets and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2022**

	<u>Beginning Invested</u> <u>Assets</u>	<u>Investment Income</u>	<u>Net Contributions</u> <u>(Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested</u> <u>Assets</u>	<u>% Change in</u> <u>Invested</u> <u>Assets</u>	<u>% Change due to</u> <u>Investment</u> <u>Income (1)</u>
<b>Participant Options</b>							
T. Rowe Price							
Stable Value Fund	\$ 206,036,477	\$ 312,270	\$ (1,008,047)	\$ (46,671)	\$ 205,294,029	-0.36%	0.15%
Small Cap Stock Fund	104,771,867	9,007,040	164,151	(686,246)	113,256,812	8.10%	8.62%
Alaska Balanced Trust	37,135,085	669,199	(81,279)	(228,260)	37,494,745	0.97%	1.81%
Long Term Balanced Fund	82,150,577	2,992,318	(90,420)	1,004,966	86,057,441	4.76%	3.62%
AK Target Date 2010 Trust	2,798,432	63,795	(191,209)	(9,370)	2,661,648	-4.89%	2.36%
AK Target Date 2015 Trust	8,459,380	223,557	(197,662)	59,829	8,545,104	1.01%	2.66%
AK Target Date 2020 Trust	19,395,192	605,329	(78,082)	(179,238)	19,743,201	1.79%	3.14%
AK Target Date 2025 Trust	24,476,406	927,143	165,504	(49,667)	25,519,386	4.26%	3.78%
AK Target Date 2030 Trust	16,490,167	704,073	57,051	(120,759)	17,130,532	3.88%	4.28%
AK Target Date 2035 Trust	12,461,464	608,287	231,667	(16,271)	13,285,147	6.61%	4.84%
AK Target Date 2040 Trust	11,456,231	612,485	148,685	(15,137)	12,202,264	6.51%	5.32%
AK Target Date 2045 Trust	8,845,415	506,752	184,997	(48,456)	9,488,708	7.27%	5.69%
AK Target Date 2050 Trust	7,412,419	439,686	188,068	(19,528)	8,020,645	8.21%	5.87%
AK Target Date 2055 Trust	5,827,442	345,867	145,585	6,441	6,325,335	8.54%	5.86%
AK Target Date 2060 Trust	1,360,675	80,905	39,427	(6,189)	1,474,818	8.39%	5.87%
AK Target Date 2065 Trust	655,646	35,895	20,903	(124,341)	588,103	-10.30%	5.94%
Total Investments with T. Rowe Price	<u>549,732,875</u>	<u>18,134,601</u>	<u>(300,661)</u>	<u>(478,897)</u>	<u>567,087,918</u>		
JP Morgan							
JPMorgan SmartRetirement Blend 2015 R6	6,450	119	413	(881)	6,101	-5.41%	1.91%
JPMorgan SmartRetirement Blend 2020 R6	83,511	1,933	4,035	11,016	100,495	20.34%	2.12%
Total Investments with JP Morgan	<u>89,961</u>	<u>2,052</u>	<u>4,448</u>	<u>10,135</u>	<u>106,596</u>		
State Street Global Advisors							
Money Market	20,574,951	48,443	(11,713)	564,078	21,175,759	2.92%	0.23%
S&P 500 Stock Index	219,620,330	17,838,684	325,001	670,783	238,454,798	8.58%	8.10%
Russell 3000 Index	40,816,914	3,314,436	239,099	(811,714)	43,558,735	6.72%	8.18%
World Equity Ex-US Index	25,348,742	876,666	151,370	359,245	26,736,023	5.47%	3.42%
Total Investments with SSgA	<u>306,360,937</u>	<u>22,078,229</u>	<u>703,757</u>	<u>782,392</u>	<u>329,925,315</u>		
BlackRock							
Passive U.S. Bond Index Fund	63,758,501	(839,650)	30,140	1,011,200	63,960,191	0.32%	-1.31%
Strategic Completion Fund	13,748,383	311,551	(2,449)	(118,512)	13,938,973	1.39%	2.28%
Total Investments with BlackRock	<u>77,506,884</u>	<u>(528,099)</u>	<u>27,691</u>	<u>892,688</u>	<u>77,899,164</u>		
Brandes and Baillie Gifford							
AK International Equity Fund	29,625,316	1,348,342	151,730	(541,775)	30,583,613	3.23%	4.58%
Northern Trust							
Environmental, Social, and Governance Fund	38,649,859	2,802,689	45,290	(664,543)	40,833,295	5.65%	7.31%
<b>Total All Funds</b>	<u>\$ 1,001,965,832</u>	<u>\$ 43,837,814</u>	<u>\$ 632,255</u>	<u>\$ -</u>	<u>\$ 1,046,435,901</u>	4.44%	4.37%

Notes: Source data provided by the record keeper, Empower Retirement.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

**Deferred Compensation Plan**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2022**  
**\$ (Thousands)**

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Investments with T. Rowe Price				
Stable Value Fund	\$ 204,728	\$ 204,568	\$ 206,036	\$ 205,294
Small Cap Stock Fund	120,486	116,930	104,772	113,257
Alaska Balanced Trust	43,306	40,397	37,135	37,495
Long Term Balanced Fund	87,367	86,805	82,151	86,057
AK Target Date 2010 Trust	3,107	3,040	2,798	2,662
AK Target Date 2015 Trust	9,156	8,822	8,459	8,545
AK Target Date 2020 Trust	22,182	20,681	19,395	19,743
AK Target Date 2025 Trust	27,723	26,538	24,476	25,519
AK Target Date 2030 Trust	18,443	18,011	16,490	17,131
AK Target Date 2035 Trust	13,986	13,551	12,461	13,285
AK Target Date 2040 Trust	12,917	12,457	11,456	12,202
AK Target Date 2045 Trust	10,058	9,779	8,845	9,489
AK Target Date 2050 Trust	8,162	7,973	7,412	8,021
AK Target Date 2055 Trust	6,577	6,377	5,827	6,325
AK Target Date 2060 Trust	1,519	1,489	1,361	1,475
AK Target Date 2065 Trust	846	830	656	588
Investments with JP Morgan				
JPMorgan SmartRetirement Blend 2015 R6	7	7	6	6
JPMorgan SmartRetirement Blend 2020 R6	90	92	84	100
Investments with State Street Global Advisors				
Money Market	20,594	20,518	20,575	21,176
S&P 500 Stock Index	251,530	242,416	219,620	238,455
Russell 3000 Index	52,553	48,501	40,817	43,559
World Equity Ex-US Index	25,143	26,539	25,349	26,736
Investments with BlackRock				
Passive U.S. Bond Index Fund	64,888	63,658	63,759	63,960
Strategic Completion Fund	16,018	15,395	13,748	13,939
Investments with Brandes and Baillie Gifford				
AK International Equity Fund	38,664	35,180	29,625	30,584
Investments with Northern Trust				
Environmental, Social, and Governance Fund	48,847	44,859	38,650	40,833
<b>Total Invested Assets</b>	<b>\$ 1,108,897</b>	<b>\$ 1,075,411</b>	<b>\$ 1,001,966</b>	<b>\$ 1,046,436</b>
<b><u>Change in Invested Assets</u></b>				
Beginning Assets	\$ 1,052,310	\$ 1,108,897	\$ 1,075,411	\$ 1,001,966
Investment Earnings	57,738	(30,723)	(68,004)	43,838
Net Contributions (Withdrawals)	(1,151)	(2,763)	(5,442)	632
<b>Ending Invested Assets</b>	<b>\$ 1,108,897</b>	<b>\$ 1,075,411</b>	<b>\$ 1,001,966</b>	<b>\$ 1,046,436</b>

Note: Source data provided by the record keeper, Empower Retirement.

**Defined Contribution Retirement - Participant Directed PERS**  
**Schedule of Investment Income and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2022**

	<u>Beginning Invested</u> <u>Assets</u>	<u>Investment Income</u>	<u>Net Contributions</u> <u>(Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested</u> <u>Assets</u>	<u>% Change in</u> <u>Invested</u> <u>Assets</u>	<u>% Change due to</u> <u>Investment</u> <u>Income (1)</u>
<b>Participant Options</b>							
<b>T. Rowe Price</b>							
Stable Value Fund	\$ 128,475,426	\$ 199,441	\$ (490,912)	\$ 4,110,775	\$ 132,294,730	2.97%	0.15%
Small Cap Stock Fund	78,633,323	6,617,944	86,706	(3,485,343)	81,852,630	4.09%	8.60%
Alaska Balanced Trust	45,501,879	817,285	(249,791)	(431,664)	45,637,709	0.30%	1.81%
Long Term Balanced Fund	45,767,572	1,702,499	(37,042)	2,587,947	50,020,976	9.29%	3.62%
AK Target Date 2010 Trust	2,763,025	62,646	(36,957)	-	2,788,714	0.93%	2.28%
AK Target Date 2015 Trust	10,153,613	264,783	(88,941)	(16,258)	10,313,197	1.57%	2.62%
AK Target Date 2020 Trust	36,233,290	1,134,311	(210,186)	(184,854)	36,972,561	2.04%	3.15%
AK Target Date 2025 Trust	72,153,502	2,739,348	(97,456)	81,405	74,876,799	3.77%	3.80%
AK Target Date 2030 Trust	84,768,210	3,648,330	224,764	(364,909)	88,276,395	4.14%	4.31%
AK Target Date 2035 Trust	105,760,620	5,136,704	610,567	(179,178)	111,328,713	5.26%	4.85%
AK Target Date 2040 Trust	124,745,849	6,631,749	433,246	(313,322)	131,497,522	5.41%	5.31%
AK Target Date 2045 Trust	163,435,552	9,336,875	942,854	(100,263)	173,615,018	6.23%	5.70%
AK Target Date 2050 Trust	193,380,960	11,384,602	1,530,881	(440,131)	205,856,312	6.45%	5.87%
AK Target Date 2055 Trust	210,659,220	12,423,639	2,442,821	(404,089)	225,121,591	6.87%	5.87%
AK Target Date 2060 Trust	13,474,752	818,260	908,643	(61,406)	15,140,249	12.36%	5.89%
AK Target Date 2065 Trust	7,586,459	457,758	585,214	(185,609)	8,443,822	11.30%	5.88%
Total Investments with T. Rowe Price	<u>1,323,493,252</u>	<u>63,376,174</u>	<u>6,554,411</u>	<u>613,101</u>	<u>1,394,036,938</u>		
<b>JP Morgan</b>							
JPMorgan SmartRetirement Blend 2015 R6	4,736	115	639	-	5,490	15.92%	2.27%
JPMorgan SmartRetirement Blend 2020 R6	69,547	1,431	1,212	(27,750)	44,440	-36.10%	2.54%
Total Investments with JP Morgan	<u>74,283</u>	<u>1,546</u>	<u>1,851</u>	<u>(27,750)</u>	<u>49,930</u>		
<b>State Street Global Advisors</b>							
Money Market	19,526,369	46,762	46,361	561,113	20,180,605	3.35%	0.24%
S&P 500 Stock Index	92,341,153	7,612,748	358,064	2,140,605	102,452,570	10.95%	8.13%
Russell 3000 Index	51,026,843	3,979,563	199,067	(4,384,902)	50,820,571	-0.40%	8.13%
World Equity Ex-US Index	62,360,631	2,165,660	53,271	808,427	65,387,989	4.85%	3.45%
Total Investments with SSgA	<u>225,254,996</u>	<u>13,804,733</u>	<u>656,763</u>	<u>(874,757)</u>	<u>238,841,735</u>		
<b>BlackRock</b>							
Passive U.S. Bond Index Fund	71,596,388	(1,024,049)	(54,698)	6,065,033	76,582,674	6.96%	-1.37%
Strategic Completion Fund	4,669,659	107,280	(11,654)	14,926	4,780,211	2.37%	2.30%
Total Investments with BlackRock	<u>76,266,047</u>	<u>(916,769)</u>	<u>(66,352)</u>	<u>6,079,959</u>	<u>81,362,885</u>		
<b>Brandes and Baillie Gifford</b>							
AK International Equity Fund	48,584,294	2,174,182	68,259	(3,317,622)	47,509,113	-2.21%	4.63%
<b>Northern Trust</b>							
Environmental, Social, and Governance Fund	45,939,799	3,262,693	39,364	(2,472,931)	46,768,925	1.80%	7.30%
<b>Total All Funds</b>	<u>\$ 1,719,612,671</u>	<u>\$ 81,702,559</u>	<u>\$ 7,254,296</u>	<u>\$ -</u>	<u>\$ 1,808,569,526</u>	5.17%	4.74%

Notes: Source data provided by the record keeper, Empower Retirement.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

**Defined Contribution Retirement - Participant Directed PERS**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2022**  
**\$ (Thousands)**

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Investments with T. Rowe Price				
Stable Value Fund	\$ 116,967	\$ 115,093	\$ 128,475	\$ 132,295
Small Cap Stock Fund	100,573	96,648	78,633	81,853
Alaska Balanced Trust	52,462	48,824	45,502	45,638
Long Term Balanced Fund	36,697	40,771	45,768	50,021
AK Target Date 2010 Trust	2,967	2,900	2,763	2,789
AK Target Date 2015 Trust	11,309	10,922	10,154	10,313
AK Target Date 2020 Trust	40,687	39,224	36,233	36,973
AK Target Date 2025 Trust	80,473	77,812	72,154	74,877
AK Target Date 2030 Trust	93,945	91,404	84,768	88,276
AK Target Date 2035 Trust	118,370	114,833	105,761	111,329
AK Target Date 2040 Trust	140,376	135,488	124,746	131,498
AK Target Date 2045 Trust	183,395	177,707	163,436	173,615
AK Target Date 2050 Trust	217,574	210,643	193,381	205,856
AK Target Date 2055 Trust	235,982	228,742	210,659	225,122
AK Target Date 2060 Trust	13,814	13,943	13,475	15,140
AK Target Date 2065 Trust	7,664	7,813	7,586	8,444
Investments with JP Morgan				
JPMorgan SmartRetirement Blend 2015 R6	5	5	5	5
JPMorgan SmartRetirement Blend 2020 R6	45	47	70	44
State Street Global Advisors				
Money Market	17,090	17,477	19,526	20,181
S&P 500 Stock Index	89,480	94,854	92,341	102,453
Russell 3000 Index	79,923	70,080	51,027	50,821
World Equity Ex-US Index	62,442	68,540	62,361	65,388
Investments with BlackRock				
Passive U.S. Bond Index Fund	59,044	58,209	71,596	76,583
Strategic Completion Fund	5,972	5,095	4,670	4,780
Investments with Brandes and Baillie Gifford				
AK International Equity Fund	75,867	67,102	48,584	47,509
Investments with Northern Trust				
Environmental, Social, and Governance Fund	65,829	58,269	45,940	46,769
<b>Total Invested Assets</b>	<b>\$ 1,908,952</b>	<b>\$ 1,852,442</b>	<b>\$ 1,719,613</b>	<b>\$ 1,808,570</b>
<b><u>Change in Invested Assets</u></b>				
Beginning Assets	\$ 1,797,125	\$ 1,908,952	\$ 1,852,442	\$ 1,719,613
Investment Earnings	106,297	(61,483)	(140,884)	81,703
Net Contributions (Withdrawals)	5,531	4,973	8,054	7,254
<b>Ending Invested Assets</b>	<b>\$ 1,908,952</b>	<b>\$ 1,852,442</b>	<b>\$ 1,719,613</b>	<b>\$ 1,808,570</b>

Note: Source data provided by the record keeper, Empower Retirement.

**Defined Contribution Retirement - Participant Directed TRS**  
**Schedule of Investment Income and Changes in Invested Assets**  
**for the Month Ended**  
**October 31, 2022**

	<u>Beginning Invested</u>		<u>Net Contributions</u>		<u>Ending Invested</u>	<u>% Change in</u>	<u>% Change due to</u>
	<u>Assets</u>	<u>Investment Income</u>	<u>(Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Assets</u>	<u>Invested</u>	<u>Investment</u>
						<u>Assets</u>	<u>Income (1)</u>
<b>Participant Options</b>							
T. Rowe Price							
Stable Value Fund	\$ 47,426,779	\$ 73,207	\$ (102,542)	\$ 1,398,626	\$ 48,796,070	2.89%	0.15%
Small Cap Stock Fund	32,659,557	2,754,160	87,167	(1,293,304)	34,207,580	4.74%	8.59%
Alaska Balanced Trust	18,234,920	330,331	20,514	174,523	18,760,288	2.88%	1.80%
Long Term Balanced Fund	19,405,920	727,364	23,595	1,333,261	21,490,140	10.74%	3.62%
AK Target Date 2010 Trust	1,142,763	25,587	(9,920)	-	1,158,430	1.37%	2.25%
AK Target Date 2015 Trust	3,376,262	88,819	94	-	3,465,175	2.63%	2.63%
AK Target Date 2020 Trust	10,681,464	337,206	70,166	(92,464)	10,996,372	2.95%	3.16%
AK Target Date 2025 Trust	22,928,468	868,355	190,210	(185,929)	23,801,104	3.81%	3.79%
AK Target Date 2030 Trust	32,559,984	1,407,102	125,721	68,434	34,161,241	4.92%	4.31%
AK Target Date 2035 Trust	44,700,863	2,171,388	486,902	(274,504)	47,084,649	5.33%	4.85%
AK Target Date 2040 Trust	54,726,968	2,917,261	512,068	(68,292)	58,088,005	6.14%	5.31%
AK Target Date 2045 Trust	77,804,401	4,434,174	513,975	12,711	82,765,261	6.38%	5.68%
AK Target Date 2050 Trust	107,069,733	6,303,989	971,827	(138,835)	114,206,714	6.67%	5.86%
AK Target Date 2055 Trust	72,931,068	4,296,181	979,996	(211,985)	77,995,260	6.94%	5.86%
AK Target Date 2060 Trust	4,477,686	269,939	326,505	12,228	5,086,358	13.59%	5.81%
AK Target Date 2065 Trust	927,752	56,983	112,481	75	1,097,291	18.27%	5.79%
Total Investments with T. Rowe Price	<u>551,054,588</u>	<u>27,062,046</u>	<u>4,308,759</u>	<u>734,545</u>	<u>583,159,938</u>		
State Street Global Advisors							
Money Market	5,962,930	14,006	(36,266)	114,292	6,054,962	1.54%	0.23%
S&P 500 Stock Index	29,314,050	2,444,266	151,904	1,165,262	33,075,482	12.83%	8.15%
Russell 3000 Index	20,875,051	1,611,175	65,191	(1,924,691)	20,626,726	-1.19%	8.08%
World Equity Ex-US Index	27,830,992	964,540	55,176	404,989	29,255,697	5.12%	3.44%
Total Investments with SSgA	<u>83,983,023</u>	<u>5,033,987</u>	<u>236,005</u>	<u>(240,148)</u>	<u>89,012,867</u>		
BlackRock							
Passive U.S. Bond Index Fund	25,427,413	(352,472)	16,630	1,758,165	26,849,736	5.59%	-1.34%
Strategic Completion Fund	1,510,204	34,457	10,239	(3,489)	1,551,411	2.73%	2.28%
Total Investments with BlackRock	<u>26,937,617</u>	<u>(318,015)</u>	<u>26,869</u>	<u>1,754,676</u>	<u>28,401,147</u>		
Brandes and Baillie Gifford							
AK International Equity Fund	22,034,426	982,225	62,639.00	(1,446,777)	21,632,513	-1.82%	4.60%
Northern Trust							
Environmental, Social, and Governance Fund	18,537,052	1,319,704	20,897.00	(802,296)	19,075,357	2.90%	7.27%
<b>Total All Funds</b>	<u>\$ 702,546,706</u>	<u>\$ 34,079,947</u>	<u>\$ 4,655,169</u>	<u>\$ -</u>	<u>\$ 741,281,822</u>	5.51%	4.83%

Notes: Source data provided by the record keeper, Empower Retirement.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

**Defined Contribution Retirement - Participant Directed TRS**  
**Schedule of Invested Assets with**  
**Schedule of Investment Income and Changes in Invested Assets**  
**By Month Through the Month Ended**  
**October 31, 2022**  
**\$ (Thousands)**

<u>Invested Assets</u> (at fair value)	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Investments with T. Rowe Price				
Stable Value Fund	\$ 45,641	\$ 44,765	\$ 47,427	\$ 48,796
Small Cap Stock Fund	40,776	38,396	32,660	34,208
Alaska Balanced Trust	22,213	19,807	18,235	18,760
Long Term Balanced Fund	15,873	18,369	19,406	21,490
AK Target Date 2010 Trust	1,532	1,498	1,143	1,158
AK Target Date 2015 Trust	3,668	3,576	3,376	3,465
AK Target Date 2020 Trust	12,107	11,706	10,681	10,996
AK Target Date 2025 Trust	26,104	25,080	22,928	23,801
AK Target Date 2030 Trust	36,650	35,226	32,560	34,161
AK Target Date 2035 Trust	51,272	49,004	44,701	47,085
AK Target Date 2040 Trust	61,928	59,549	54,727	58,088
AK Target Date 2045 Trust	88,513	85,155	77,804	82,765
AK Target Date 2050 Trust	121,377	116,909	107,070	114,207
AK Target Date 2055 Trust	82,948	79,620	72,931	77,995
AK Target Date 2060 Trust	4,935	4,780	4,478	5,086
AK Target Date 2065 Trust	993	950	928	1,097
Investments with State Street Global Advisors				
Money Market	5,583	5,551	5,963	6,055
S&P 500 Stock Index	26,108	30,067	29,314	33,075
Russell 3000 Index	32,509	27,219	20,875	20,627
World Equity Ex-US Index	27,123	30,294	27,831	29,256
Investments with BlackRock				
Passive U.S. Bond Index Fund	21,858	22,279	25,427	26,850
Strategic Completion Fund	1,745	1,664	1,510	1,551
Investments with Brandes and Baillie Gifford				
AK International Equity Fund	32,754	28,144	22,034	21,633
Investments with Northern Trust				
Environmental, Social, and Governance Fund	26,794	22,626	18,537	19,075
<b>Total Invested Assets</b>	<b>\$ 791,005</b>	<b>\$ 762,235</b>	<b>\$ 702,547</b>	<b>\$ 741,282</b>
<b><u>Change in Invested Assets</u></b>				
Beginning Assets	\$ 742,358	\$ 791,005	\$ 762,235	\$ 702,547
Investment Earnings	44,277	(25,432)	(58,565)	34,080
Net Contributions (Withdrawals)	4,370	(3,337)	(1,124)	4,655
<b>Ending Invested Assets</b>	<b>\$ 791,005</b>	<b>\$ 762,235</b>	<b>\$ 702,547</b>	<b>\$ 741,282</b>

Note: Source data provided by the record keeper, Empower Retirement.

**ALASKA RETIREMENT MANAGEMENT BOARD**

**FINANCIAL REPORT**

**(Supplement to the Treasury Division Report)**

**As of October 31, 2022**

**Prepared by the Division of Retirement & Benefits**

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**  
**(Supplement to the Treasury Division Report)**  
**For the Four Months Ending October 31, 2022**

	Contributions				Expenditures				Net Contributions/ (Withdrawals)
	Contributions EE and/or ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	
<b>Public Employees' Retirement System (PERS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Pension Trust	\$ 153,435,941	\$ 33,933,000	\$ 56,746	\$ 187,425,687	\$ (338,084,497)	\$ (3,234,270)	\$ (1,557,018)	\$ (342,875,785)	\$ (155,450,098)
Retirement Health Care Trust	3,799,301	-	23,252,794	27,052,095	(176,522,233)	-	(7,002,510)	(183,524,743)	(156,472,648)
Total Defined Benefit Plans	157,235,242	33,933,000	23,309,540	214,477,782	(514,606,730)	(3,234,270)	(8,559,528)	(526,400,528)	(311,922,746)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	66,493,028	-	-	66,493,028	-	(37,549,338)	(3,131,136)	(40,680,474)	25,812,554
Health Reimbursement Arrangement <sup>(a)</sup>	15,960,542	-	-	15,960,542	(277,383)	-	(57,167)	(334,550)	15,625,992
Retiree Medical Plan <sup>(a)</sup>	5,908,807	-	67,290	5,976,097	(421,740)	-	(39,366)	(461,106)	5,514,991
Occupational Death and Disability: <sup>(a)</sup>									
All Others	1,307,378	-	-	1,307,378	(55,492)	-	(6,025)	(61,517)	1,245,861
Peace Officers and Firefighters	561,034	-	-	561,034	(163,048)	-	(2,442)	(165,490)	395,544
Total Defined Contribution Plans	90,230,789	-	67,290	90,298,079	(917,663)	(37,549,338)	(3,236,136)	(41,703,137)	48,594,942
<b>Total PERS</b>	<b>247,466,031</b>	<b>33,933,000</b>	<b>23,376,830</b>	<b>304,775,861</b>	<b>(515,524,393)</b>	<b>(40,783,608)</b>	<b>(11,795,664)</b>	<b>(568,103,665)</b>	<b>(263,327,804)</b>
<b>Teachers' Retirement System (TRS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Pension Trust	15,993,721	91,029,000	11,158	107,033,879	(180,253,112)	(668,492)	(924,005)	(181,845,609)	(74,811,730)
Retirement Health Care Trust	2,568,055	-	8,037,218	10,605,273	(55,479,943)	-	(2,542,285)	(58,022,228)	(47,416,955)
Total Defined Benefit Plans	18,561,776	91,029,000	8,048,376	117,639,152	(235,733,055)	(668,492)	(3,466,290)	(239,867,837)	(122,228,685)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	18,093,280	-	-	18,093,280	-	(12,464,227)	(1,064,799)	(13,529,026)	4,564,254
Health Reimbursement Arrangement <sup>(a)</sup>	3,040,556	-	-	3,040,556	(55,038)	-	(16,804)	(71,842)	2,968,714
Retiree Medical Plan <sup>(a)</sup>	977,558	-	14,591	992,149	(95,052)	-	(13,007)	(108,059)	884,090
Occupational Death and Disability <sup>(a)</sup>	86,556	-	-	86,556	(8,629)	-	(1,629)	(10,258)	76,298
Total Defined Contribution Plans	22,197,950	-	14,591	22,212,541	(158,719)	(12,464,227)	(1,096,239)	(13,719,185)	8,493,356
<b>Total TRS</b>	<b>40,759,726</b>	<b>91,029,000</b>	<b>8,062,967</b>	<b>139,851,693</b>	<b>(235,891,774)</b>	<b>(13,132,719)</b>	<b>(4,562,529)</b>	<b>(253,587,022)</b>	<b>(113,735,329)</b>
<b>Judicial Retirement System (JRS)</b>									
Defined Benefit Plan Retirement Pension Trust	3,187,511	3,225,000	-	6,412,511	(5,090,646)	-	(54,539)	(5,145,185)	1,267,326
Defined Benefit Plan Retirement Health Care Trust	232,640	-	79,391	312,031	(463,655)	-	(30,785)	(494,440)	(182,409)
<b>Total JRS</b>	<b>3,420,151</b>	<b>3,225,000</b>	<b>79,391</b>	<b>6,724,542</b>	<b>(5,554,301)</b>	<b>-</b>	<b>(85,324)</b>	<b>(5,639,625)</b>	<b>1,084,917</b>
<b>National Guard/Naval Militia Retirement System (NGNMRS)</b>									
Defined Benefit Plan Retirement Pension Trust <sup>(a)</sup>	-	-	-	-	(732,144)	-	(67,701)	(799,845)	(799,845)
<b>Other Participant Directed Plans</b>									
Supplemental Annuity Plan (SBS)	56,687,528	-	-	56,687,528	-	(81,057,881)	(2,636,167)	(83,694,048)	(27,006,520)
Deferred Compensation Plan <sup>(b)</sup> (DCP)	16,457,909	-	-	16,457,909	-	(24,498,829)	(682,229)	(25,181,058)	(8,723,149)
<b>Total All Funds</b>	<b>364,791,345</b>	<b>128,187,000</b>	<b>31,519,188</b>	<b>524,497,533</b>	<b>(757,702,612)</b>	<b>(159,473,037)</b>	<b>(19,829,614)</b>	<b>(937,005,263)</b>	<b>(412,507,730)</b>
Total Non-Participant Directed	207,059,600	128,187,000	31,519,188	366,765,788	(757,702,612)	(3,902,762)	(12,315,283)	(773,920,657)	(407,154,869)
Total Participant Directed	157,731,745	-	-	157,731,745	-	(155,570,275)	(7,514,331)	(163,084,606)	(5,352,861)
<b>Total All Funds</b>	<b>\$ 364,791,345</b>	<b>\$ 128,187,000</b>	<b>\$ 31,519,188</b>	<b>\$ 524,497,533</b>	<b>\$ (757,702,612)</b>	<b>\$ (159,473,037)</b>	<b>\$ (19,829,614)</b>	<b>\$ (937,005,263)</b>	<b>\$ (412,507,730)</b>

(a) Employer only contributions.

(b) Employee only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**  
**(Supplement to the Treasury Division Report)**  
**For the Month Ended October 31, 2022**

	Contributions			Expenditures				Net Contributions/ (Withdrawals)	
	Contributions EE and/or ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment		Total Expenditures
<b>Public Employees' Retirement System (PERS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Pension Trust	\$ 41,897,743	\$ -	\$ 11,853	\$ 41,909,596	\$ (84,929,131)	\$ (721,044)	\$ (535,218)	\$ (86,185,393)	\$ (44,275,797)
Retirement Health Care Trust	86,525	-	1,926,036	2,012,561	(41,437,874)	-	(3,067,807)	(44,505,681)	(42,493,120)
Total Defined Benefit Plans	41,984,268	-	1,937,889	43,922,157	(126,367,005)	(721,044)	(3,603,025)	(130,691,074)	(86,768,917)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	18,173,874	-	-	18,173,874	-	(10,224,324)	(695,254)	(10,919,578)	7,254,296
Health Reimbursement Arrangement <sup>(a)</sup>	4,404,637	-	-	4,404,637	(73,490)	-	(21,244)	(94,734)	4,309,903
Retiree Medical Plan <sup>(a)</sup>	1,593,475	-	6,777	1,600,252	(86,592)	-	(15,341)	(101,933)	1,498,319
Occupational Death and Disability: <sup>(a)</sup>									
All Others	359,842	-	-	359,842	(13,967)	-	(1,288)	(15,255)	344,587
Peace Officers and Firefighters	138,451	-	-	138,451	(30,885)	-	(553)	(31,438)	107,013
Total Defined Contribution Plans	24,670,279	-	6,777	24,677,056	(204,934)	(10,224,324)	(733,680)	(11,162,938)	13,514,118
<b>Total PERS</b>	<b>66,654,547</b>	<b>-</b>	<b>1,944,666</b>	<b>68,599,213</b>	<b>(126,571,939)</b>	<b>(10,945,368)</b>	<b>(4,336,705)</b>	<b>(141,854,012)</b>	<b>(73,254,799)</b>
<b>Teachers' Retirement System (TRS)</b>									
<u>Defined Benefit Plans:</u>									
Retirement Pension Trust	5,448,626	-	3,482	5,452,108	(44,960,239)	(113,455)	(267,415)	(45,341,109)	(39,889,001)
Retirement Health Care Trust	61,407	-	677,397	738,804	(13,451,629)	-	(1,096,993)	(14,548,622)	(13,809,818)
Total Defined Benefit Plans	5,510,033	-	680,879	6,190,912	(58,411,868)	(113,455)	(1,364,408)	(59,889,731)	(53,698,819)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	6,559,874	-	-	6,559,874	-	(1,598,455)	(306,250)	(1,904,705)	4,655,169
Health Reimbursement Arrangement <sup>(a)</sup>	931,168	-	-	931,168	(13,860)	-	(6,120)	(19,980)	911,188
Retiree Medical Plan <sup>(a)</sup>	288,952	-	1,309	290,261	(17,438)	-	(3,905)	(21,343)	268,918
Occupational Death and Disability <sup>(a)</sup>	25,557	-	-	25,557	(2,173)	-	(186)	(2,359)	23,198
Total Defined Contribution Plans	7,805,551	-	1,309	7,806,860	(33,471)	(1,598,455)	(316,461)	(1,948,387)	5,858,473
<b>Total TRS</b>	<b>13,315,584</b>	<b>-</b>	<b>682,188</b>	<b>13,997,772</b>	<b>(58,445,339)</b>	<b>(1,711,910)</b>	<b>(1,680,869)</b>	<b>(61,838,118)</b>	<b>(47,840,346)</b>
<b>Judicial Retirement System (JRS)</b>									
Defined Benefit Plan Retirement Pension Trust	-	-	-	-	(1,372,862)	-	(7,627)	(1,380,489)	(1,380,489)
Defined Benefit Plan Retirement Health Care Trust	-	-	5,872	5,872	(117,731)	-	(9,048)	(126,779)	(120,907)
<b>Total JRS</b>	<b>-</b>	<b>-</b>	<b>5,872</b>	<b>5,872</b>	<b>(1,490,593)</b>	<b>-</b>	<b>(16,675)</b>	<b>(1,507,268)</b>	<b>(1,501,396)</b>
<b>National Guard/Naval Militia Retirement System (NGNMRS)</b>									
Defined Benefit Plan Retirement Pension Trust <sup>(a)</sup>	-	-	-	-	(179,025)	-	(7,658)	(186,683)	(186,683)
<b>Other Participant Directed Plans</b>									
Supplemental Annuity Plan (SBS)	13,981,139	-	-	13,981,139	-	(19,105,931)	(878,361)	(19,984,292)	(6,003,153)
Deferred Compensation Plan <sup>(b)</sup> (DCP)	5,587,481	-	-	5,587,481	-	(4,740,948)	(214,278)	(4,955,226)	632,255
<b>Total All Funds</b>	<b>99,538,751</b>	<b>-</b>	<b>2,632,726</b>	<b>102,171,477</b>	<b>(186,686,896)</b>	<b>(36,504,157)</b>	<b>-</b>	<b>(230,325,599)</b>	<b>(128,154,122)</b>
Total Non-Participant Directed	55,236,383	-	2,632,726	57,869,109	(186,686,896)	(834,499)	(5,040,403)	(192,561,798)	(134,692,689)
Total Participant Directed	44,302,368	-	-	44,302,368	-	(35,669,658)	(2,094,143)	(37,763,801)	6,538,567
<b>Total All Funds</b>	<b>\$ 99,538,751</b>	<b>\$ -</b>	<b>\$ 2,632,726</b>	<b>\$ 102,171,477</b>	<b>\$ (186,686,896)</b>	<b>\$ (36,504,157)</b>	<b>\$ (7,134,546)</b>	<b>\$ (230,325,599)</b>	<b>\$ (128,154,122)</b>

(a) Employer only contributions.

(b) Employee only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**  
**(Supplement to the Treasury Division Report)**  
**For the Four Months Ending October 31, 2022**

**PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND TYPE**

Type	PERS DCR Plan	TRS DCR Plan	Supplemental Annuity Plan	Deferred Compensation	TOTAL	% of Total
Payment to Beneficiary	\$ 30,233	\$ -	\$ 306,931	\$ 98,113	\$ 435,277	0.3%
Death Benefit	911,811	299,562	4,727,377	1,339,789	7,278,539	4.7%
Disability / Hardship	-	-	36,954	53,988	90,942	0.1%
Minimum Required Distribution	47,314	31,573	4,457,372	1,831,261	6,367,520	4.1%
Deminimus Acct Balance Distribution	-	-	-	4,856	4,856	0.0%
Qualified Domestic Relations Order	602,251	-	1,350,522	50,767	2,003,540	1.3%
Separation from Service / Retirement	28,620,215 <sup>a</sup>	9,734,962 <sup>a</sup>	69,054,258	20,654,535	128,063,970	82.2%
Purchase of Service Credit	4,379,380 <sup>a</sup>	1,278,235 <sup>a</sup>	1,124,467	9,741	6,791,823	4.4%
59-½ In-service Distribution	-	-	-	435,779	435,779	0.3%
Qualified Birth / Adoption Expense	-	-	-	20,000	20,000	0.0%
CARES Act Distributions	-	-	-	-	-	0.0%
DCR to DB Conversion	2,958,134 <sup>a</sup>	1,119,895 <sup>a</sup>	-	-	4,078,029	2.6%
<b>TOTAL</b>	<b>\$ 37,549,338</b>	<b>\$ 12,464,227</b>	<b>\$ 81,057,881</b>	<b>\$ 24,498,829</b>	<b>\$ 155,570,275</b>	<b>100.0%</b>

<sup>a</sup> Employer distributions sent to the DB plan are shown as "DCR to DB Conversion". Employee funds sent to the DB plan are included with "Purchase of Service Credit". Excess employee money sent to employee after conversion are included in "Separation from Service".

**PERS & TRS PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND VESTED PERCENTAGE**

Vesting	PERS DCR Plan	TRS DCR Plan	TOTAL	% of Total
100% Vested	\$ 34,031,886	\$ 11,047,945	\$ 45,079,831	90.1%
75% Vested	723,385	439,276	1,162,661	2.3%
50% Vested	886,455	342,636	1,229,091	2.5%
25% Vested	642,422	303,057	945,479	1.9%
0% Vested	1,265,190	331,313	1,596,503	3.2%
<b>TOTAL</b>	<b>\$ 37,549,338</b>	<b>\$ 12,464,227</b>	<b>\$ 50,013,565</b>	<b>100.0%</b>

**DEFINED BENEFIT REFUNDS BY PLAN, TIER, CONTRIBUTION TYPE AND VESTED STATUS**

Contribution Type	PERS DB Pension Plan				TRS DB Pension Plan			JRS	TOTAL
	Tier 1	Tier 2	Tier 3	Total	Tier 1	Tier 2	Total	DB Pension Plan	DB Pension Plan
Mandatory Vested	\$ 19,478	\$ 295,793	\$ 608,671	\$ 923,942	\$ -	\$ 83,465	\$ 83,465	\$ -	\$ 1,007,407.00
Mandatory Non-Vested	45,003	113,581	294,244	452,828	152,090	413,086	565,176	-	1,018,004
Geographic Differential	-	91,537	21,208	112,745	-	-	-	-	112,745
Voluntary Full	201,742	697,346	730,468	1,629,556	-	-	-	-	1,629,556
Indebtedness, Lagging & Partial	-	35,591	79,608	115,199	-	19,851	19,851	-	135,050
<b>TOTAL</b>	<b>\$ 266,223</b>	<b>\$ 1,233,848</b>	<b>\$ 1,734,199</b>	<b>\$ 3,234,270</b>	<b>\$ 152,090</b>	<b>\$ 516,402</b>	<b>\$ 668,492</b>	<b>\$ -</b>	<b>\$ 3,902,762</b>

## Notes for the DRB Supplement to the Treasury Report

October 2022

This report is the DRB supplement to the Treasury Division's Financial Report. It expands the "Net Contributions/(Withdrawals)" column into contributions and expenditures. It shows contributions received from both employees and employers, contributions from the State of Alaska, and other non-investment income. This report also expands expenditures into benefits, refunds & disbursements, and administrative & investment expenditures.

The net amount of total contributions and total expenditures, presented as "Net Contributions/(Withdrawals)", agrees with the same column in the Treasury Division's Report. Page one shows the year-to-date totals for the first four months of Fiscal Year 2023, while page two shows only the month of October 2022.

Highlights – On page one, for the four months ending October 31, 2022:

- PERS DB Pension – Average employer and employee contributions of \$38.4 million per month, benefit payments of approximately \$84.5 million per month, refunds average \$809 thousand, and administrative and investment expenditures of \$389 thousand per month (DOR and DRB).
- PERS DB Healthcare – Average employer contributions of \$950 thousand per month, and benefit payments of approximately \$44.1 million per month. Other income of \$7.5 million from OptumRx EGWP subsidies (most recently received in September for September 2022), \$7.7 million from OptumRx pharmacy rebates (most recently received in August for 2nd Qtr 2022), \$5.6 million from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for July 2022), \$410 thousand from Aetna pharmacy rebates (most recently received in September for 1st Qtr 2022), and average administrative and investment expenditures of \$1.8 million per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of \$16.6 million per month, participant disbursements average \$9.4 million per month, and average administrative and investment expenditures of \$783 thousand per month (DOR and DRB).
- PERS DCR Health – For HRA, RMP, and OD&D only, employer contributions average \$5.9 million per month on behalf of participating employees, and benefit payments of approximately \$229 thousand per month. Currently, 14 benefits are being paid from the Occupational Death & Disability plans, 94 retirees are participating in RMP, and 134 retirees are participating in HRA. Other income of \$25 thousand from OptumRx EGWP subsidies (most recently received in September for September 2022), \$13 thousand from OptumRx pharmacy rebates (most recently received in August for 2nd Qtr 2022), \$20 thousand from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for July 2022), and administrative and investment expenditures were approximately \$26 thousand per month (DOR and DRB).
- TRS DB Pension – Average employer and employee contributions of \$4 million per month, benefit payments of approximately \$45.1 million per month, refunds average \$167 thousand, and average administrative and investment expenditures of \$231 thousand per month (DOR and DRB).
- TRS DB Healthcare – For HRA, RMP, and OD&D only, average employer contributions of \$642 thousand per month, and benefit payments of approximately \$13.9 million per month. Other income of \$2.7 million from OptumRx EGWP subsidies (most recently received in September for September 2022), \$2.6 million from OptumRx pharmacy rebates (most recently received in August for 2nd Qtr 2022), \$1.8 million from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for July 2022), \$190 thousand from Aetna pharmacy rebates (most recently received in September for 1st Qtr 2022), and average administrative and investment expenditures of \$636 thousand per month (DOR and DRB).

- TRS DC Pension – Average employer and employee contributions of \$4.5 million per month, participant disbursements average \$3.1 million per month, and average administrative and investment expenditures of \$266 thousand per month (DOR and DRB).
- TRS DCR Health – Average employer contributions of \$1 million per month, and benefit payments of approximately \$40 thousand per month. Other income of \$4 thousand from OptumRx EGWP subsidies (most recently received in September for September 2022), \$2 thousand from OptumRx pharmacy rebates (most recently received in August for 2nd Qtr 2022), \$6 thousand from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for July 2022), and average administrative and investment expenditures of \$8 thousand per month (DOR and DRB).
- JRS Pension – Average employer and employee contributions of \$1.1 million per month, benefit payments of approximately \$1.3 million per month, and average administrative and investment expenditures of \$14 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of \$78 thousand per month, and benefit payments of approximately \$116 thousand per month. Other income of \$23 thousand from OptumRx EGWP subsidies (most recently received in September for September 2022), \$24 thousand from OptumRx pharmacy rebates (most recently received in August for 2nd Qtr 2022), \$20 thousand from EGWP coverage gap discount program (CGDP) (most recently received in July for July 2022), and average administrative and investment expenditures of \$8 thousand per month (DOR and DRB).
- NGNMRS – A combination of lump-sum and monthly benefit payments of \$183 thousand per month, and average administrative and investment expenditures of \$17 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of \$14.2 million per month. Participant disbursements average of \$20.3 million per month, and average administrative and investment expenditures of \$659 thousand per month (DOR and DRB).
- Deferred Compensation – Average employer and employee contributions and transfers in of \$4.1 million per month, participant disbursements average of \$6.1 million per month, and average administrative and investment expenditures of \$171 thousand per month (DOR and DRB).

Highlights – On page two, activity for the one month of October 2022 only:

- PERS DB Healthcare - Other income of \$1.9 million from OptumRx EGWP subsidies.
- TRS DB Healthcare - Other income of \$677 thousand from OptumRx EGWP subsidies.
- All other funds - Nothing significant to report.

If you have any questions or comments, please let me know.

**ALASKA RETIREMENT MANAGEMENT BOARD**  
**STAFF REPORT**  
**Division of Retirement & Benefits Report**  
**December 1, 2022**

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**Summary of Monthly Billings – Buck Global LLC**

Attached is the requested summary schedule of invoices by quarter related to actuarial services provided by the Division's consulting actuary, Buck Global LLC.

Included on this schedule is the quarter ended September 30, 2022.

Items listed on the left side of the schedule represent regular and non-regular services provided under our current contract.

The associated costs of each service are charged to the System or Plan noted on the column headings.

## ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Summary of Monthly Billings - ACTION: \_\_\_\_\_  
Buck Global LLC  
DATE: December 1, 2022 INFORMATION: X

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### BACKGROUND:

AS 37.10.220(a)(8) prescribes that the Alaska Retirement Management Board (Board) “coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios....”

As part of the oversight process, the Board has requested that the Division of Retirement and Benefits provide quarterly summary updates to review services provided and costs incurred for actuarial valuations and other systems’ requests.

### STATUS:

Attached are the summary totals for the three months ended September 30, 2022, with comparative totals from the prior fiscal year.

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**Buck**  
**Billing Summary**  
**For the Three Months Ended September 30, 2022**

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>TOTAL</u>
Actuarial valuations	\$ 53,466	42,561	5,457	5,457	2,184	\$ 109,125
KPMG audit information request	2,280	926	17	65	-	3,288
ARMB presentations and meeting attendance	3,411	3,414	-	-	-	6,825
FY24 final PERS/TRS contribution rates	3,411	3,414	-	-	-	6,825
GASB 67/74	7,572	6,060	759	759	-	15,150
GASB 68/75	22,722	18,180	2,274	2,274	-	45,450
Projections	6,750	6,750	-	-	-	13,500
Meeting materials	3,551	1,444	26	101	-	5,122
<b>TOTAL</b>	<u>\$ 103,163</u>	<u>82,749</u>	<u>8,533</u>	<u>8,656</u>	<u>2,184</u>	<u>\$ 205,285</u>
<b>For the Three Months Ended September 30, 2021</b>	<u>\$ 150,478</u>	<u>101,313</u>	<u>8,561</u>	<u>8,580</u>	<u>2,184</u>	<u>\$ 271,116</u>

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Retirement System Membership Activity  
as of September 30, 2022

ACTION: \_\_\_\_\_

DATE: November 30, 2022

INFORMATION:   **X**  

---

## **BACKGROUND:**

Information related to PERS, TRS, JRS, NGNMRS, SBS, and DCP membership activity as requested by the Board.

## **STATUS:**

Membership information as of September 30, 2022.

# ALASKA RETIREMENT MANAGEMENT BOARD

## STAFF REPORT

### Division of Retirement & Benefits Report November 30, 2022

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#### **Retirement System Membership Activity as of September 30, 2022**

Attached are the membership statistics for the quarter ending

- September 30, 2022

Active counts have changed in the following manner:

- PERS Tier 1-3 active members decreased from 8,996 to 8,856 or a decrease of 140.
- PERS DCR active members increased from 25,405 to 25,434, or an increase of 29.
- PERS active members had a net decrease of 111.
  
- TRS Tier 1-2 active members decreased from 3,190 to 3,085, or a decrease of 105.
- TRS DCR active members increased from 6,304 to 6,591, or an increase of 287.
- TRS active members had a net increase of 182.

Retiree counts have changed in the following manner:

- PERS retirees increased from 37,449 to 37,649, or an increase of 200 (all tiers).
- TRS retirees increased from 13,462 to 13,746, or an increase of 284 (all tiers).

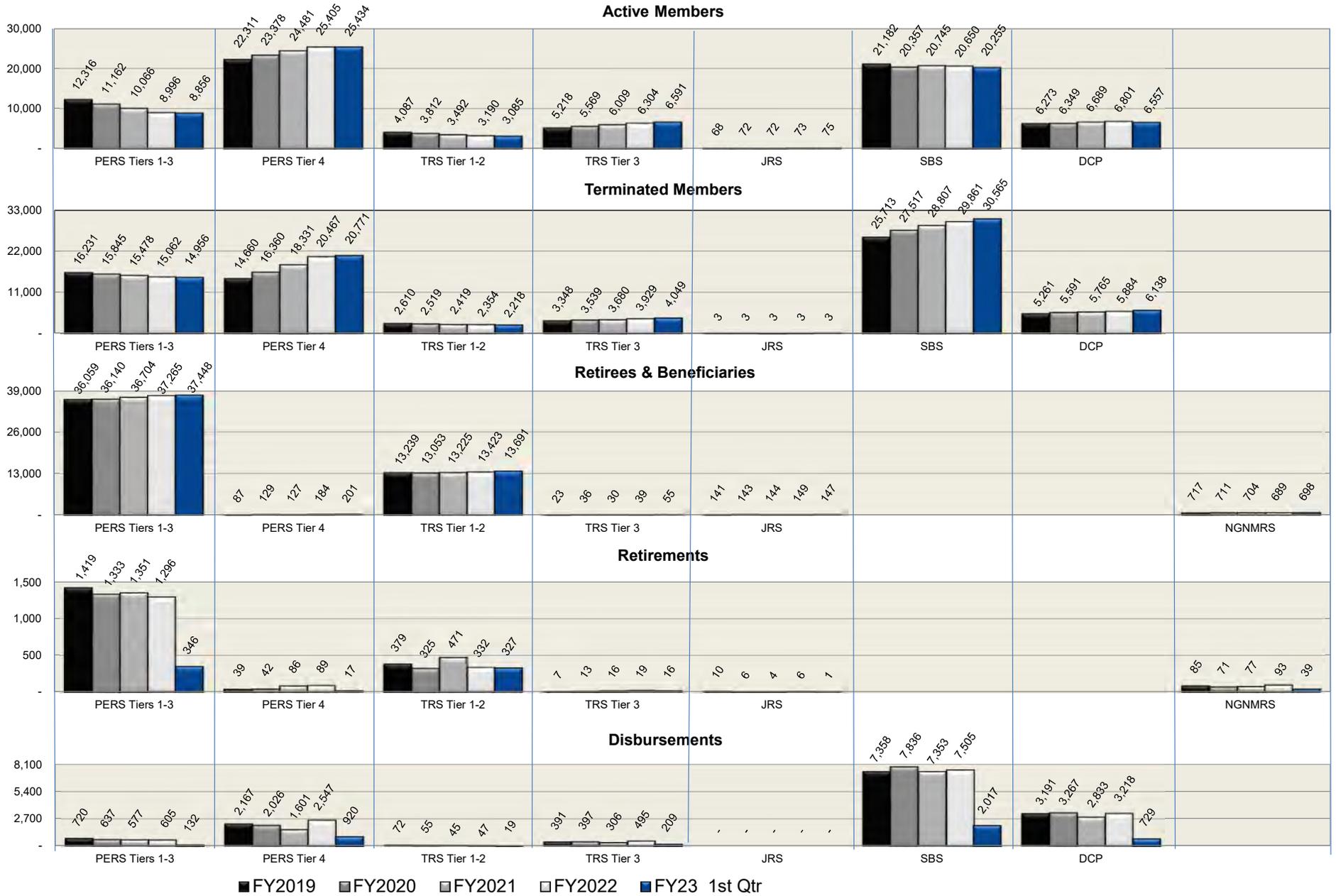
**MEMBERSHIP STATISTICS AS OF JUNE 30, 2022**

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB			Total	DCR	SYSTEM	DB			DCR	SYSTEM				
	Tier I	Tier II	Tier III		Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	505	1,922	6,569	8,996	25,405	34,401	131	3,059	3,190	6,304	9,494	73	n/a	20,650	6,801
Terminated Members															
Entitled to Future Benefits	236	1,514	3,174	4,924	2,423	7,347	25	713	738	944	1,682	1	n/a	29,861	5,884
Other Terminated Members	962	1,936	7,240	10,138	18,044	28,182	212	1,404	1,616	2,985	4,601	2	n/a	n/a	n/a
Total Terminated Members	1,198	3,450	10,414	15,062	20,467	35,529	237	2,117	2,354	3,929	6,283	3	n/a	29,861	5,884
Retirees & Beneficiaries	21,915	9,584	5,766	37,265	184	37,449	9,825	3,598	13,423	39	13,462	149	689	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	6,028	6,028	n/a	n/a	n/a	1,513	1,513	n/a	n/a	3,517	3,433
Retirements - 4th QTR FY22	51	160	198	409	50	459	-	16	16	7	23	2	36	n/a	n/a
Full Disbursements - 4th QTR FY22	9	60	85	154	474	628	1	10	11	35	46	-	n/a	269	156
Partial Disbursements - 4th QTR FY22	n/a	n/a	n/a	n/a	125	125	n/a	n/a	n/a	31	31	n/a	n/a	987	521

**MEMBERSHIP STATISTICS AS OF SEPTEMBER 30, 2022**

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB			Total	DCR	SYSTEM	DB			DCR	SYSTEM				
	Tier I	Tier II	Tier III		Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	499	1,855	6,502	8,856	25,434	34,290	113	2,972	3,085	6,591	9,676	75	n/a	20,255	6,557
Terminated Members															
Entitled to Future Benefits	229	1,475	3,146	4,850	2,514	7,364	16	605	621	1,014	1,635	1	n/a	30,565	6,138
Other Terminated Members	958	1,930	7,218	10,106	18,257	28,363	209	1,388	1,597	3,035	4,632	2	n/a	n/a	n/a
Total Terminated Members	1,187	3,405	10,364	14,956	20,771	35,727	225	1,993	2,218	4,049	6,267	3	n/a	30,565	6,138
Retirees & Beneficiaries	21,845	9,701	5,902	37,448	201	37,649	9,811	3,880	13,691	55	13,746	147	698	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	6,017	6,017	n/a	n/a	n/a	1,501	1,501	n/a	n/a	3,564	3,498
Retirements - 1st QTR FY23	42	146	158	346	17	363	34	293	327	16	343	1	39	n/a	n/a
Full Disbursements - 1st QTR FY23	9	51	72	132	717	849	6	13	19	143	162	-	n/a	632	162
Partial Disbursements - 1st QTR FY23	n/a	n/a	n/a	n/a	203	203	n/a	n/a	n/a	66	66	n/a	n/a	1,385	567

Alaska Division of Retirement and Benefits  
**FY 2023 QUARTERLY REPORT OF MEMBERSHIP STATISTICS**  
 Annual & Quarterly Trends as of September 30, 2022



## LEGEND

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**Active Members** - All active members at the time of the data pull,

except SBS & DCP, which are counts of contributors during the final quarter of each period.

**Terminated Members** - All members who have terminated without refunding their account,

except SBS & DCP, which are counts of members with balances at the end of the period less active members.

**Retirees & Beneficiaries** - All members who have retired from the plans, including beneficiaries eligible for benefits.

**Managed Accounts** - Individuals who have elected to participate in the managed accounts option with Empower.

**Retirements** - The number of retirement applications processed.

**Full Disbursements** - All types of disbursements that leave the member balance at zero.

**Partial Disbursements** - All types of disbursements that leave the member balance above zero. If more than one partial disbursement is completed during the quarter for a member, they are counted only once for statistical purposes.



Chief Investment Officer Report

December 2022

1. CIO Update
2. Watch List:
  - a. Existing – Fidelity Real Estate High Income, performance, 12/21
  - b. Existing – Fidelity Signals, personnel turnover, 3/22
  - c. Existing – Blackrock Real Estate, personnel turnover, 3/22
  - d. Existing – Brandes International, performance, 3/22
  - e. Existing – Baillie Gifford, performance, 9/22
  - f. Recommended Removal – Fidelity Signals
3. Material contract and investment actions:
  - a. 10/10/22 Callan LLC – DC Investment Structure Evaluation
  - b. 10/21/22 Crestline - \$50 million increase in multi-asset investments
4. Portfolio Transaction Update from September 2022 through October 2022

## Individual Manager Transactions

September - October 2022

<b>Asset Class</b>	<b>Total</b>
Fixed Income	190,000,000
Broad Domestic Equity	(365,000,000)
Global Equity Ex-US	175,000,000
Real Assets	-
Multi-asset	-
Private Equity	-
Net Buys	365,000,000
Net Sells	(365,000,000)

<b>Manager</b>	<b>Total</b>	<b>Fund</b>	<b>Asset Class</b>	<b>Description</b>
Short Term Fixed Income Pool	280,000,000	AY70	Fixed Income	Rebalancing
SSGA World ex-US IMI	175,000,000	AYL7	Intl. Equity	Rebalancing
ARMB Multi-factor	100,000,000	AYK4	Dom. Equity	Rebalancing
ARMB S&P 600	(59,500,000)	AYGA	Dom. Equity	Rebalancing
ARMB Aggregate Bond Fund	(90,000,000)	AY77	Fixed Income	Rebalancing
ARMB Scientific Beta	(155,000,000)	AYLM	Dom. Equity	Rebalancing
ARMB S&P 900	(250,500,000)	AY4L	Dom. Equity	Rebalancing



# State of Alaska Retirement Systems

Presentation to ARMB Actuarial Committee

- Preliminary June 30, 2022 Valuations Results (PERS/TRS)

November 30, 2022

# Contents

	Slide
<b>Purpose of the 2022 Valuations</b>	4
<b>2022 Valuation Highlights</b>	
- General Observations	6
- Asset Experience	7-8
- Liability Experience	9-11
- Claims Experience	12
<b>Historical Figures (2006-2022)</b>	14-23
<b>IRA 2022 Update</b>	25-28
<b>Next Steps</b>	30
<b>Actuarial Certification</b>	32

# Purpose of the 2022 Valuations

# Purpose of the 2022 Valuations

- Measure each plan's funded status as of June 30, 2022
- Compare actual FY22 experience (assets and liabilities) to expected experience based on the assumptions used in the 2021 valuations
- Calculate the effects of the new assumptions adopted by the ARMB in June 2022 based on the 2021 experience study
- Provide the basis for FY25 contribution rates to be adopted by the ARMB in September 2023

# 2022 Valuation Highlights

# General Observations

- Assets underperformed relative to expectations in FY22
- Pension liabilities are higher than expected primarily due to Postretirement Pension Adjustments (PRPAs) and salary increases
- Healthcare liabilities are lower than expected primarily due to favorable claims experience
- New assumptions had a relatively small impact on the liabilities
- No significant changes in pension funded ratios vs last year, healthcare funded ratios increased
- Employer/State contribution rates are higher than last year for pension, and lower than last year for healthcare

# FY22 Asset Experience – PERS

(\$000's)

## Market Value

PERS - Pension			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
11,912,309	12,386,201	<b>(1,570,061)</b>	10,816,140

PERS - Healthcare			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
9,784,141	10,157,569	<b>(1,288,435)</b>	8,869,134

## Actuarial Value

PERS - Pension			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
10,466,709	10,833,916	<b>127,582</b>	10,961,498

PERS - Healthcare			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
8,581,155	8,865,802	<b>114,141</b>	8,979,943

FY22 estimated returns:

- Market = (6.0)%
- Actuarial = 8.7%

Note: In deriving our estimated returns, we make a simplifying assumption that cash flows are uniformly distributed throughout the year. The DOR's FY22 market return may differ from our estimate due to a more refined approach.

# FY22 Asset Experience – TRS

(\$000's)

## Market Value

TRS - Pension			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
6,731,481	6,907,591	<b>(880,940)</b>	6,026,651

TRS - Healthcare			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
3,723,031	3,884,064	<b>(491,853)</b>	3,392,211

## Actuarial Value

TRS - Pension			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
5,910,369	6,025,881	<b>74,323</b>	6,100,204

TRS - Healthcare			
6/30/21	6/30/22	FY22	6/30/22
actual	expected	gain/(loss)	actual
A	B	C	D = B + C
3,267,737	3,395,169	<b>42,047</b>	3,437,216

FY22 estimated returns:

- Market = (6.0)%
- Actuarial = 8.7%

Note: In deriving our estimated returns, we make a simplifying assumption that cash flows are uniformly distributed throughout the year. The DOR's FY22 market return may differ from our estimate due to a more refined approach.

# FY22 Liability Experience

(\$000's)

## PERS

PERS - Pension				
6/30/21 actual	6/30/22 expected	FY22 gain/(loss)	assumption changes	6/30/22 actual
A	B	C	D	E = B - C + D
15,419,975	15,685,956	(201,832)	205,891	16,093,679

PERS - Healthcare				
6/30/21 actual	6/30/22 expected	FY22 gain/(loss)	assumption changes	6/30/22 actual
A	B	C	D	E = B - C + D
6,856,170	7,024,712	279,251	(88,392)	6,657,069

## TRS

TRS - Pension				
6/30/21 actual	6/30/22 expected	FY22 gain/(loss)	assumption changes	6/30/22 actual
A	B	C	D	E = B - C + D
7,471,887	7,539,454	(120,559)	144,033	7,804,046

TRS - Healthcare				
6/30/21 actual	6/30/22 expected	FY22 gain/(loss)	assumption changes	6/30/22 actual
A	B	C	D	E = B - C + D
2,439,603	2,507,373	85,338	20,542	2,442,577

# Key Reasons for Liability Gains/(Losses) During FY22 – PERS

(\$000's)

	Pension	Healthcare
PRPA increases due to 2021 CPI > expected	(162,028)	n/a
Salary increases > expected	(50,545)	n/a
Demographic experience	8,059	(417)
Claims experience	n/a	251,976
Changes in dependent coverage elections	n/a	17,064
Medicare Part B only experience	n/a	5,064
Other	<u>2,682</u>	<u>5,564</u>
Total - \$	(201,832)	279,251
Total - %	(1.3)%	4.1%

# Key Reasons for Liability Gains/(Losses) During FY22 – TRS

(\$000's)

	Pension	Healthcare
PRPA increases due to 2021 CPI > expected	(85,465)	n/a
Salary increases > expected	(30,870)	n/a
Demographic experience	(7,166)	(13,268)
Claims experience	n/a	94,487
Changes in dependent coverage elections	n/a	1,071
Medicare Part B only experience	n/a	1,235
Other	<u>2,942</u>	<u>1,813</u>
Total - \$	(120,559)	85,338
Total - %	(1.5)%	3.5%

# FY22 Claims Experience Gains

- Key reasons for the \$252M (PERS) and \$94M (TRS) per capita claims cost gains:
  - Medical costs are lower than projected (7% lower for Pre-Medicare / 5% lower for Medicare)
  - EGWP subsidy provided by Segal increased by 16% from \$1,131 for 2022 to \$1,309 for 2023

Fiscal 2023 Valuation age 65 per capita cost	Medical			Prescription Drugs (Rx)		
	Pre-Medicare	Medicare Parts A & B	Medicare Part B Only	Pre-Medicare	Medicare	EGWP (Subsidy)
- Expected	16,929	1,706	5,629	3,615	3,721	(1,211)
- Actual	15,706	1,625	5,363	3,712	3,907	(1,309)
- Dollar (Gain) / Loss	(1,223)	(81)	(266)	97	186	(98)
- Percentage (Gain) / Loss	(7.2%)	(4.7%)	(4.7%)	2.7%	5.0%	(8.1%)

## Individual Retiree Cost at Age 65 Actual vs Expected

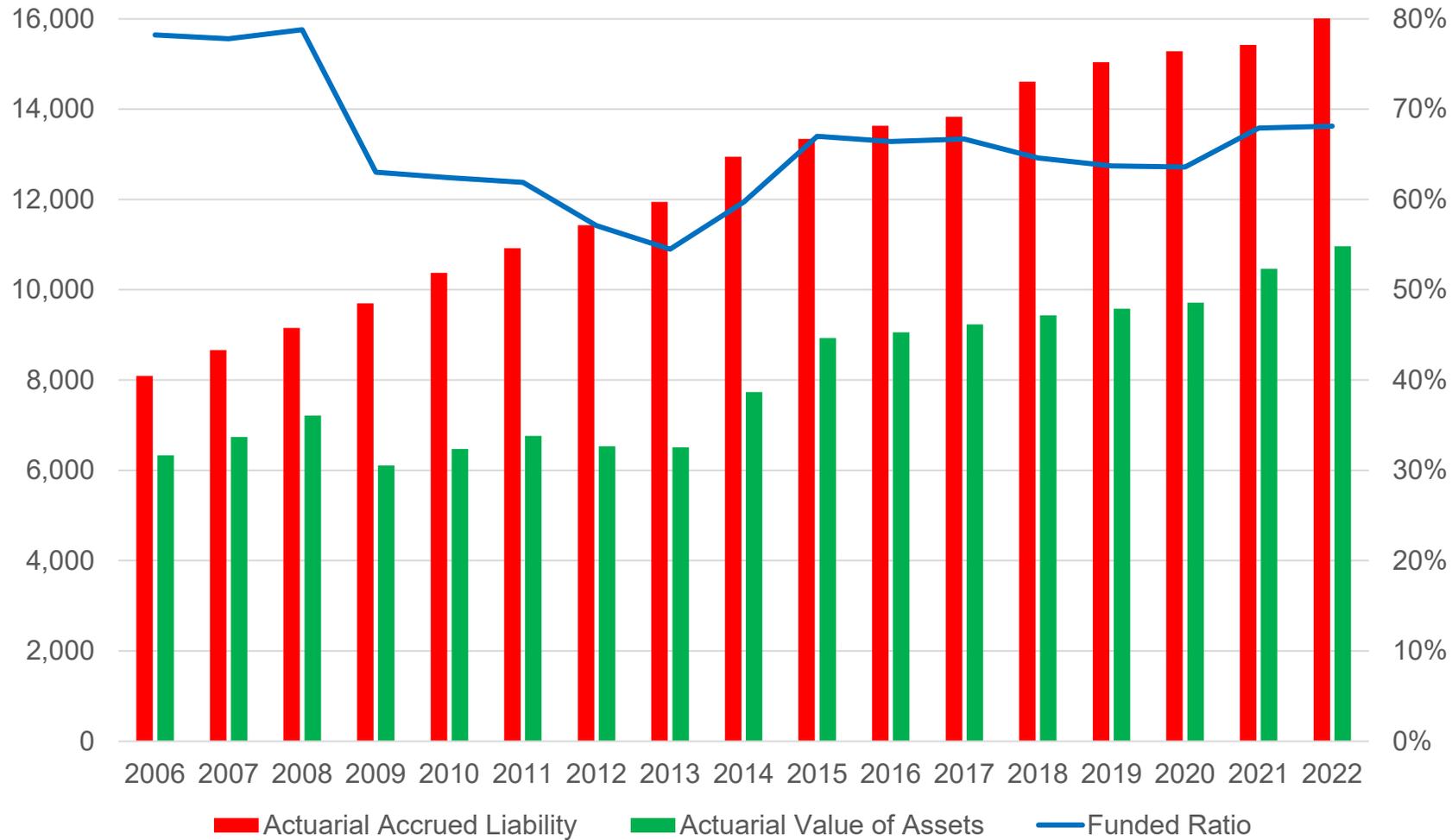
Medical, Rx and EGWP Combined  
Medicare Member with A&B



Pre-65 = Pre-Medicare Medical + Rx  
Post-65 = Medicare A&B + Rx + EGWP

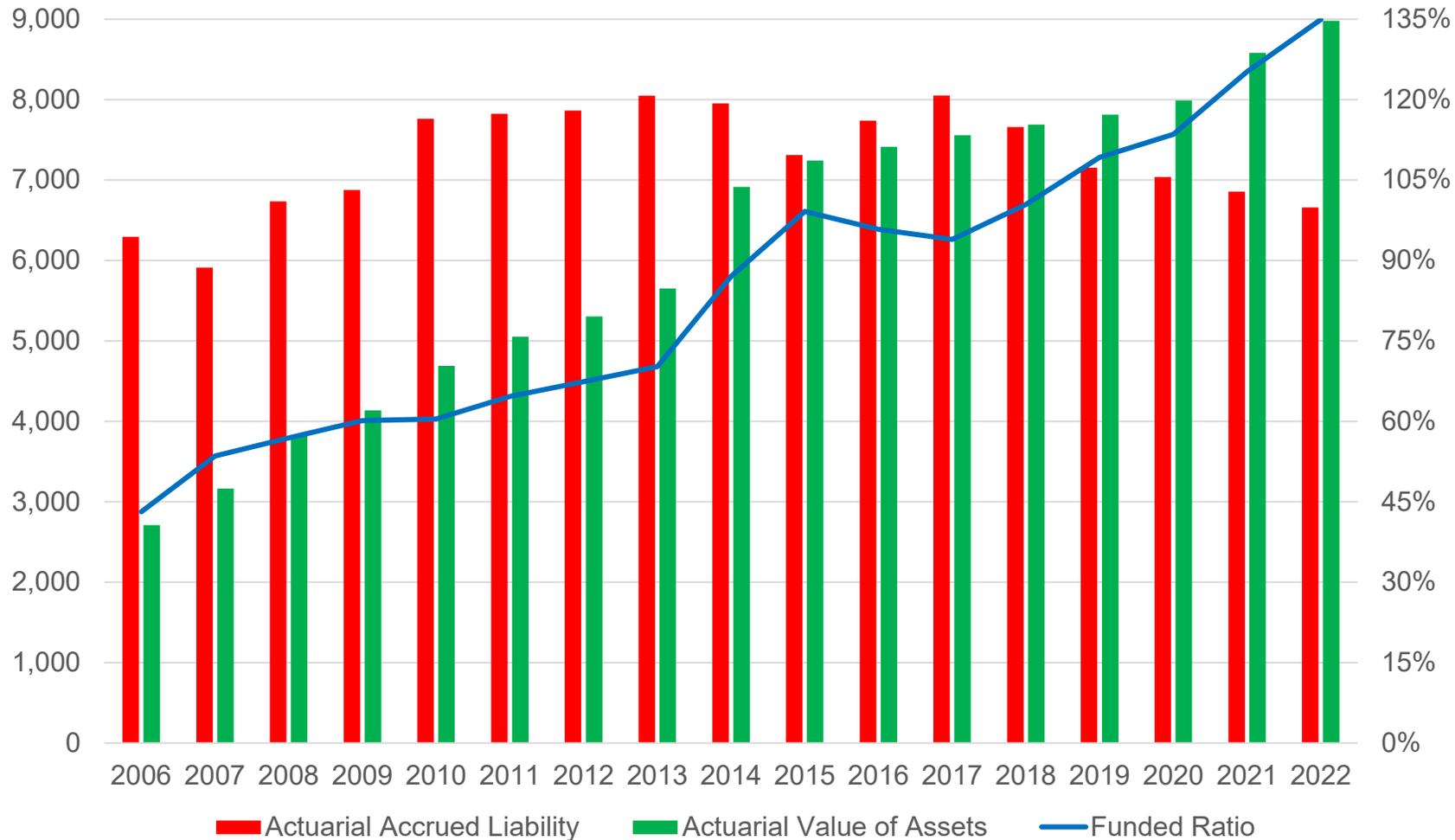
# Historical Figures (2006-2022)

# Assets, Liabilities and Funded Ratio – PERS Pension (\$millions)



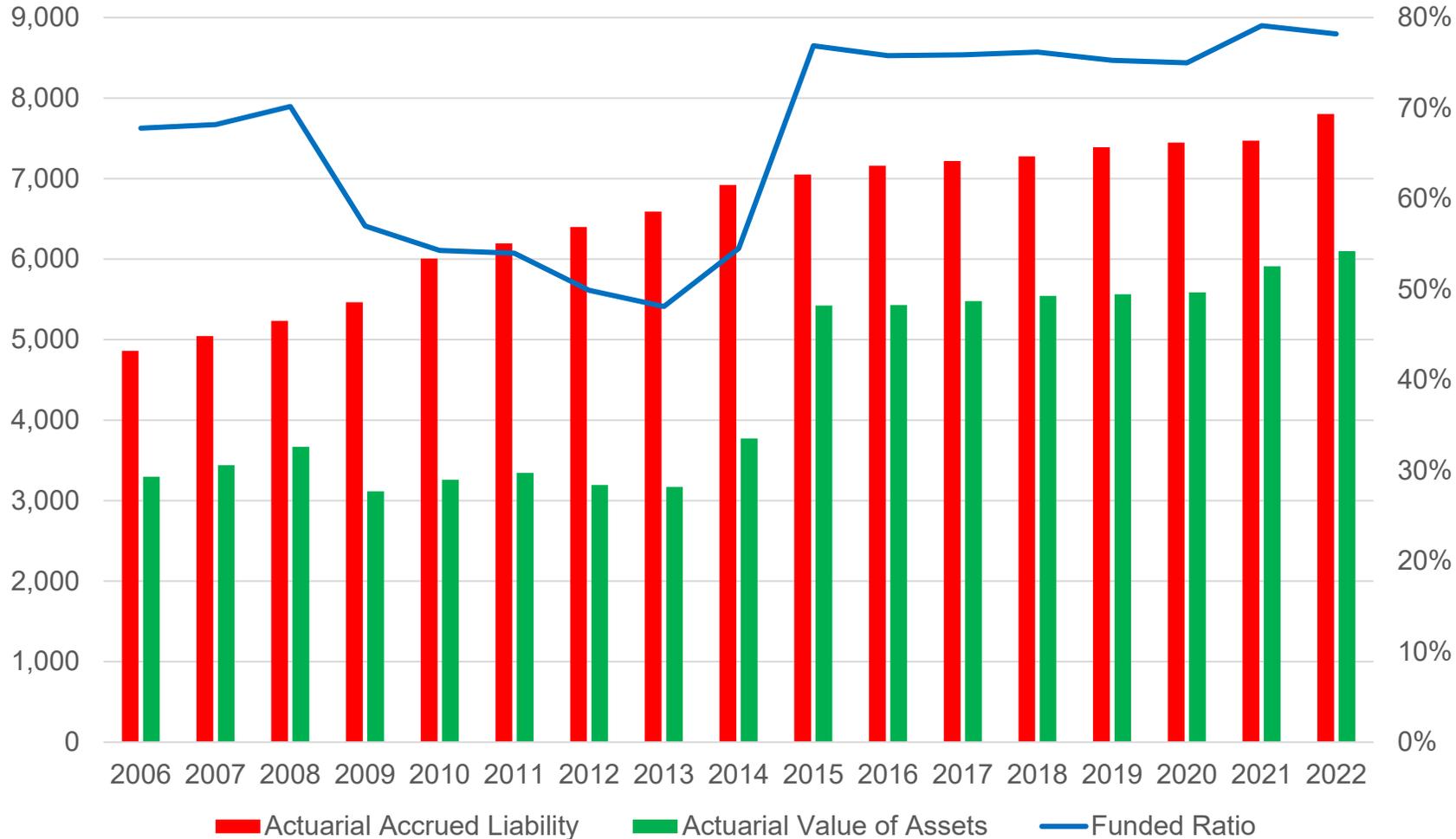
2006 Funded Ratio: 78.2%  
2022 Funded Ratio: 68.1%

# Assets, Liabilities and Funded Ratio – PERS Healthcare (\$millions)



2006 Funded Ratio: 43.1%  
2022 Funded Ratio: 134.9%

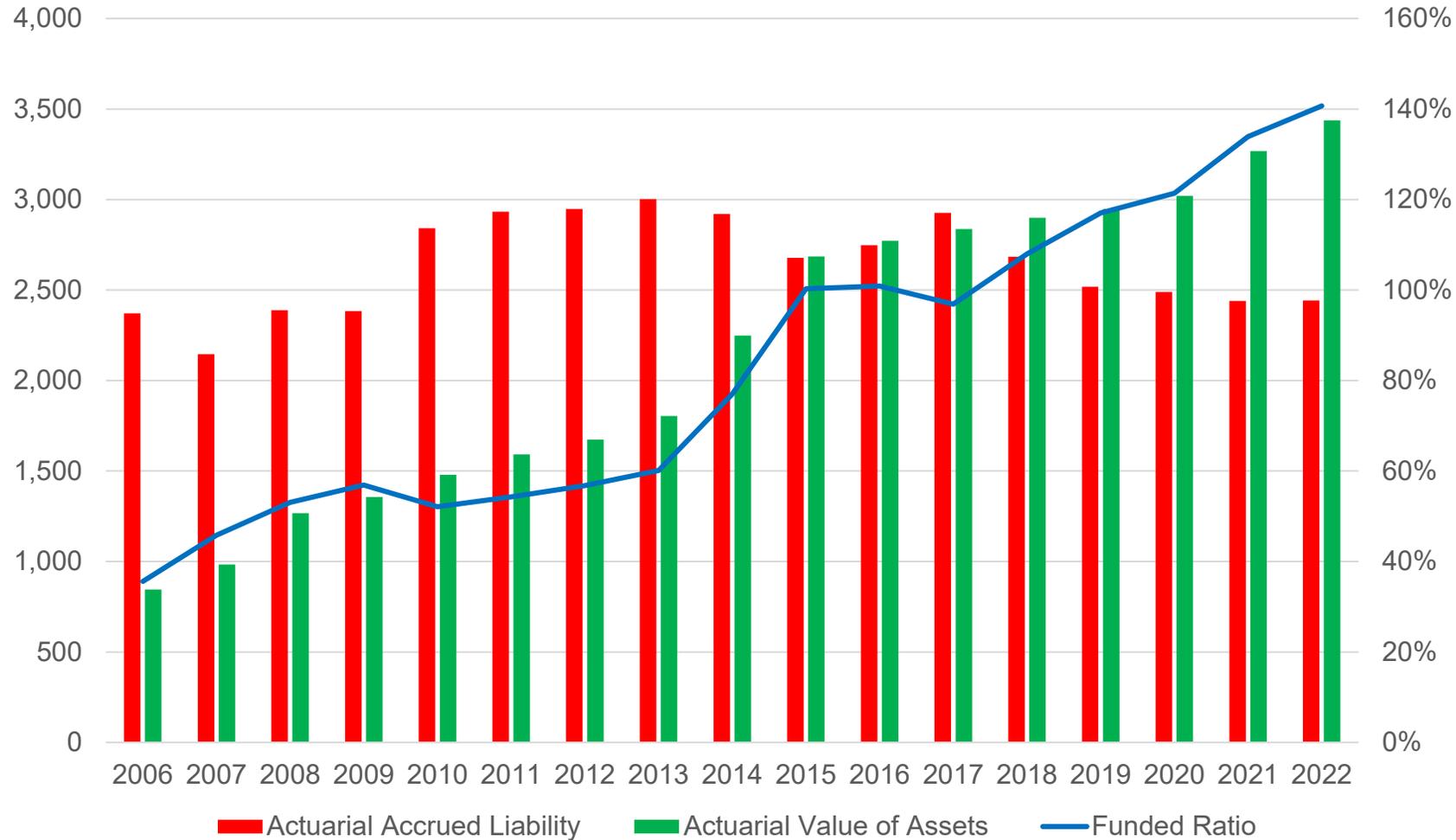
# Assets, Liabilities and Funded Ratio – TRS Pension (\$millions)



2006 Funded Ratio: 67.8%  
2022 Funded Ratio: 78.2%

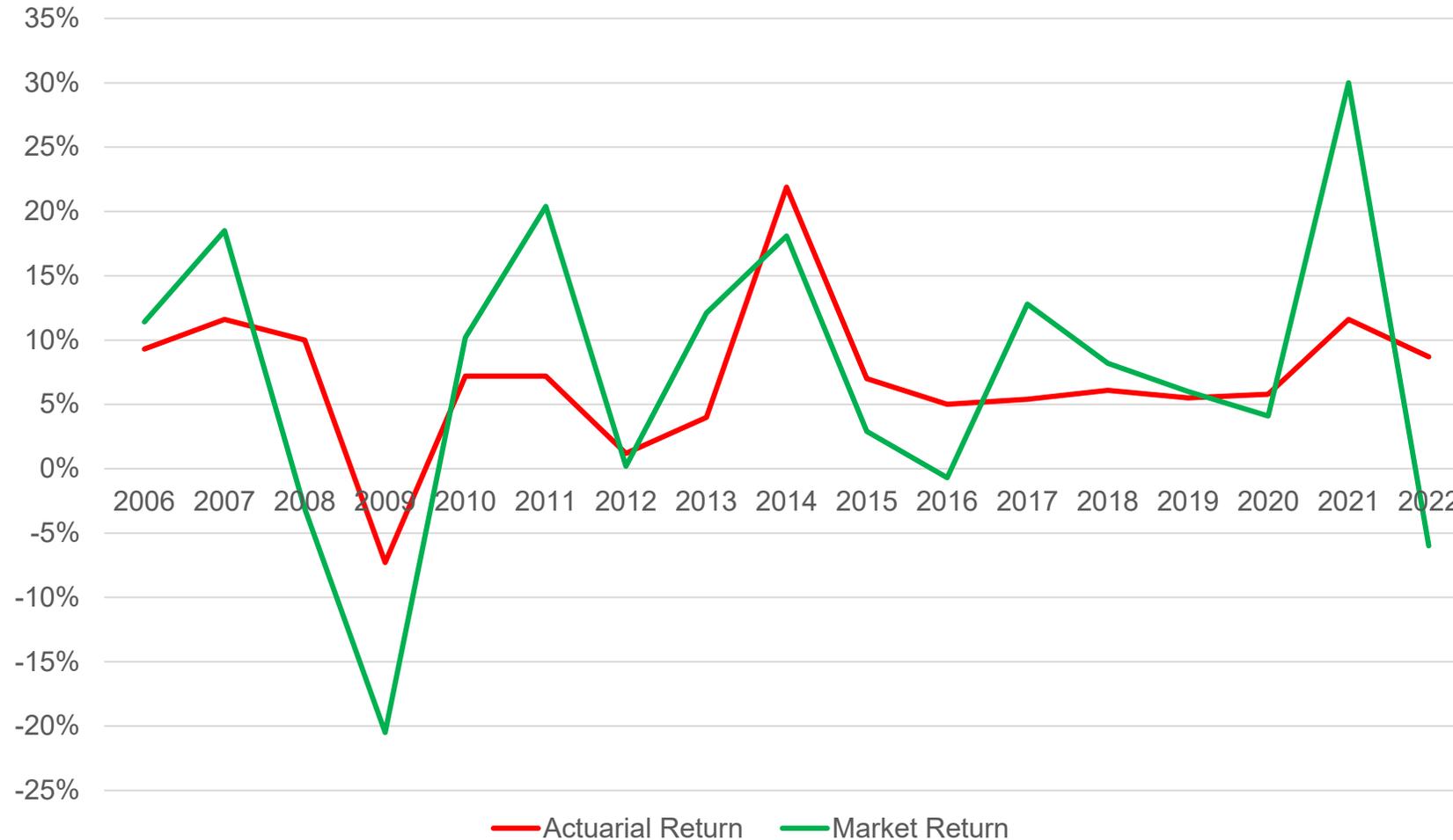
# Assets, Liabilities and Funded Ratio – TRS Healthcare

(\$millions)



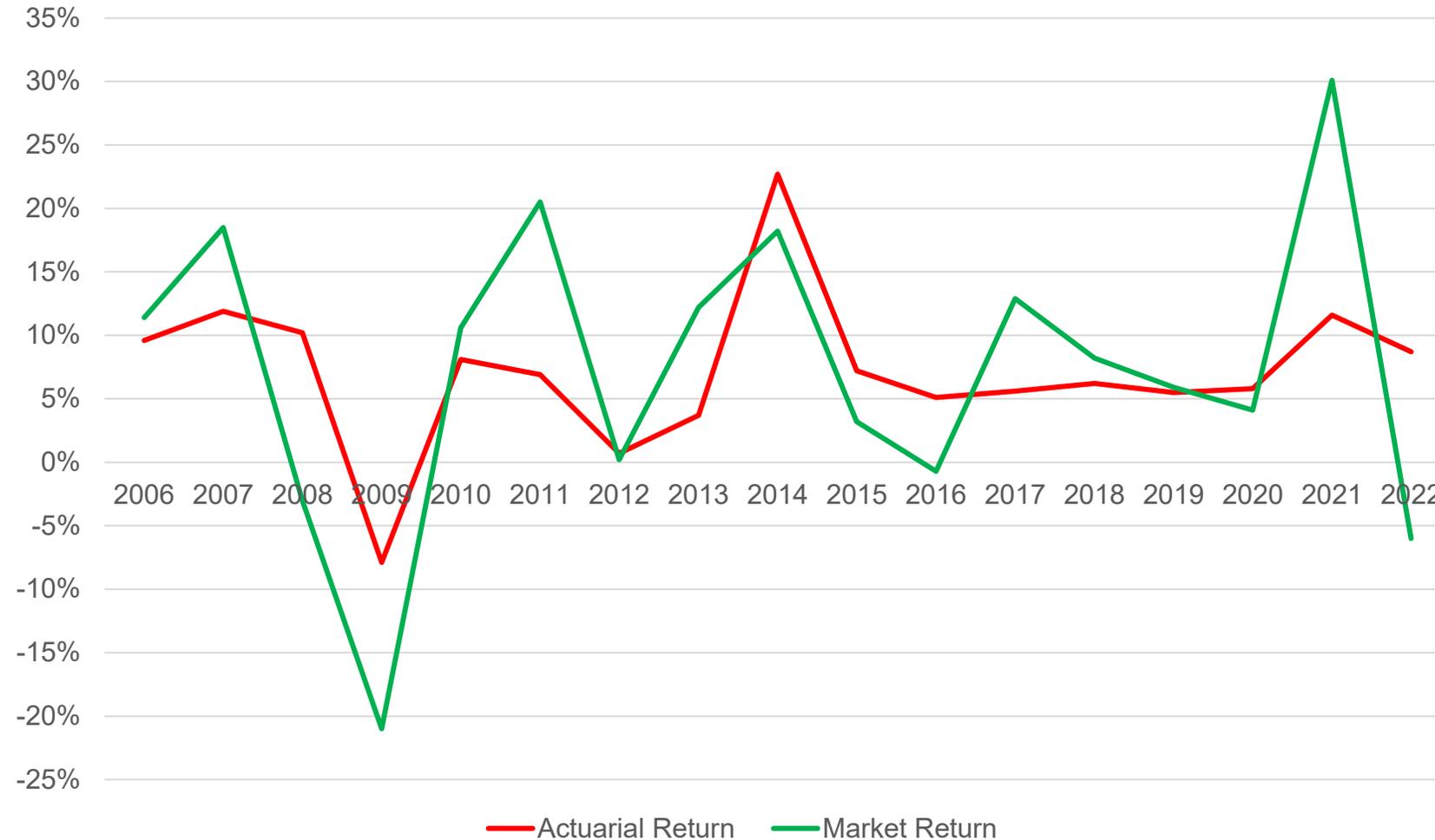
2006 Funded Ratio: 35.6%  
 2022 Funded Ratio: 140.7%

# Asset Returns – PERS



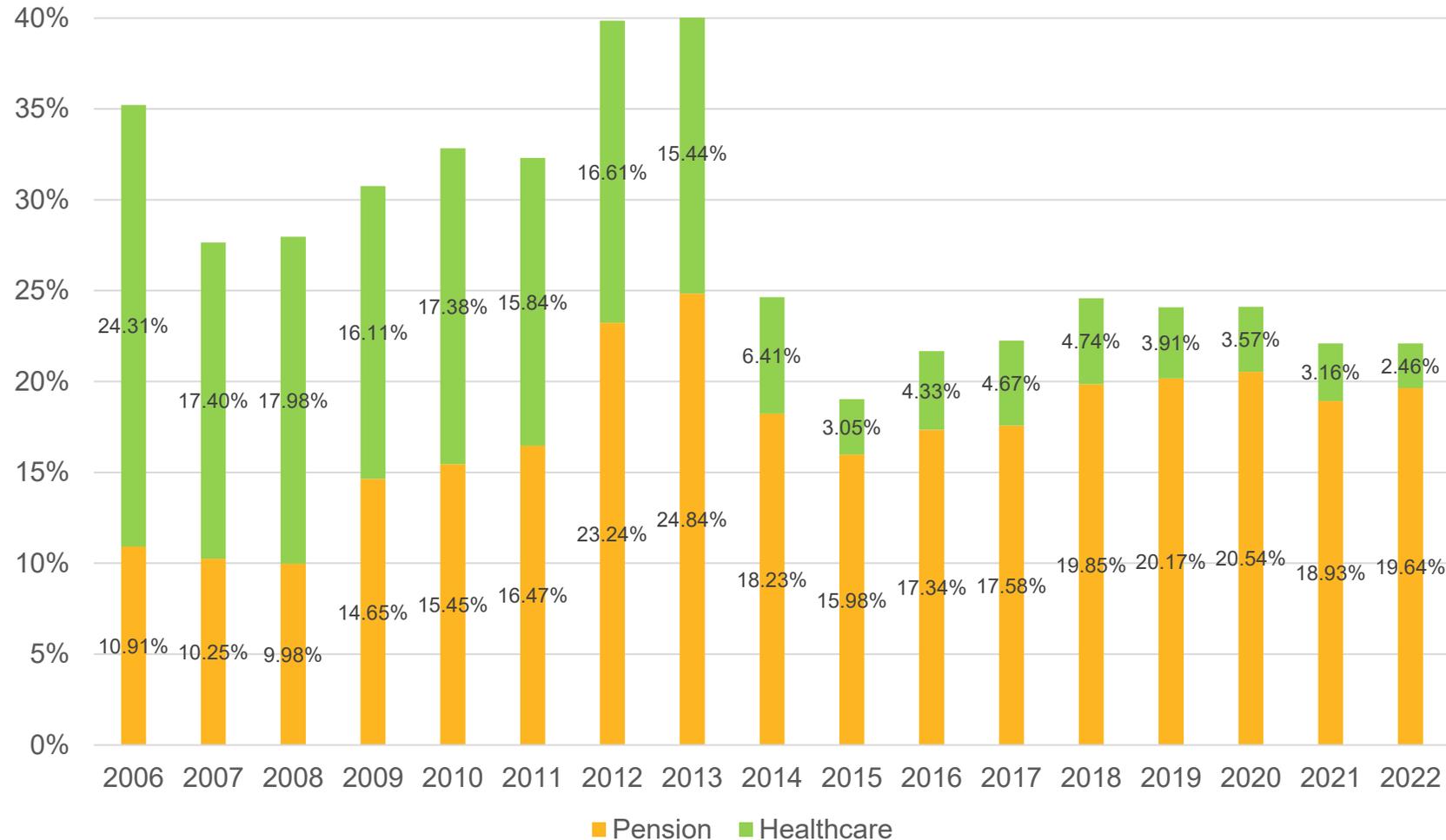
The spike in actuarial return in 2014 is due to the reset of actuarial value to market value that was effective 6/30/14.

# Asset Returns – TRS



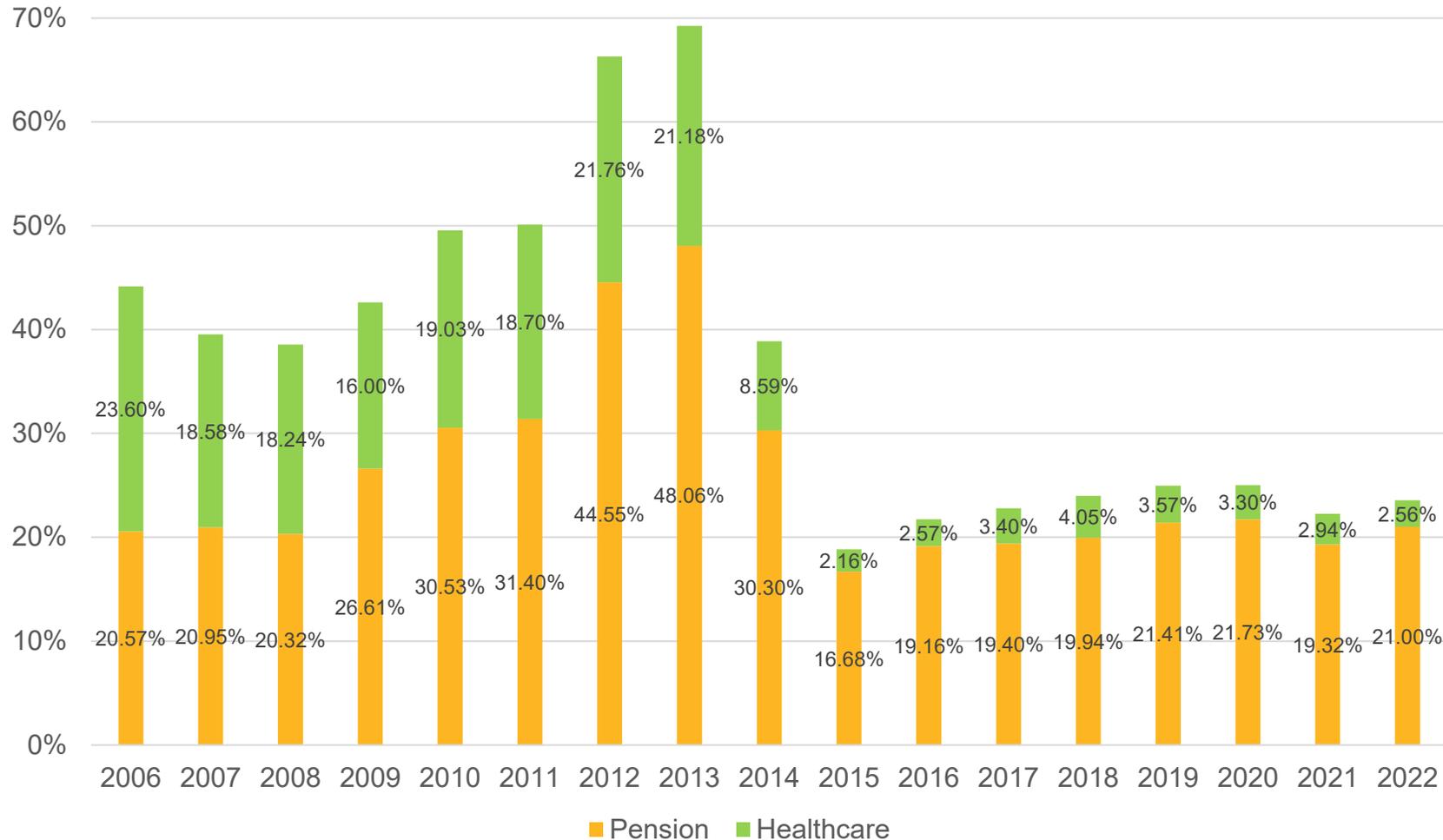
The spike in actuarial return in 2014 is due to the reset of actuarial value to market value that was effective 6/30/14.

# June 30 Valuation Contribution Rates – PERS



Rates shown for June 30, 2006 through June 30, 2013 are the ARMB-adopted contribution rates for the fiscal year beginning two years later. Starting with the June 30, 2014 valuations, the ARMB-adopted contribution rates (not shown on this slide) are based on a 2-year roll-forward of liabilities and a 1-year roll-forward of assets to the fiscal year beginning two years later. All rates are a percentage of DB/DCR payroll.

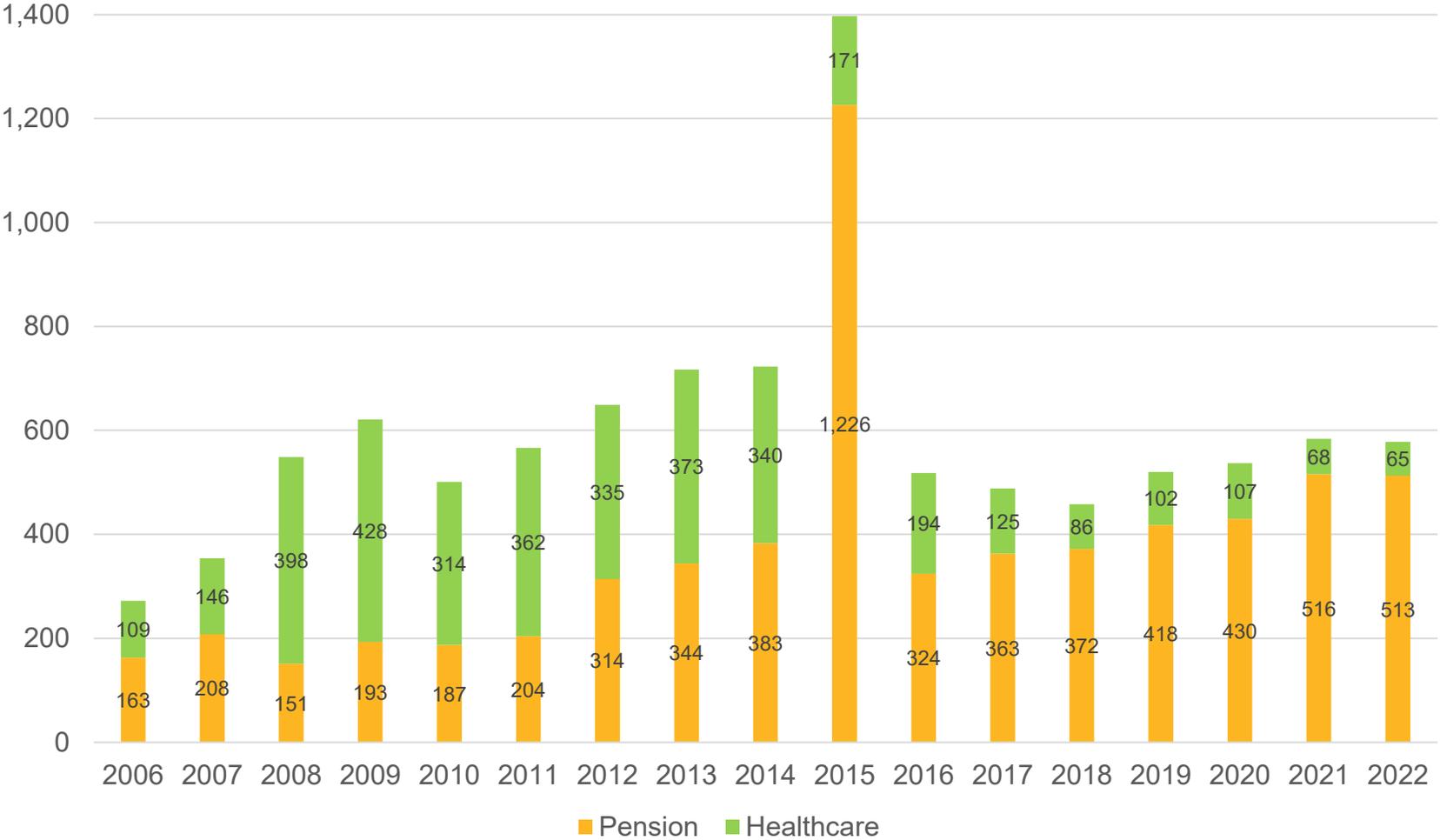
# June 30 Valuation Contribution Rates – TRS



Rates shown for June 30, 2006 through June 30, 2013 are the ARMB-adopted contribution rates for the fiscal year beginning two years later. Starting with the June 30, 2014 valuations, the ARMB-adopted contribution rates (not shown on this slide) are based on a 2-year roll-forward of liabilities and a 1-year roll-forward of assets to the fiscal year beginning two years later. All rates are a percentage of DB/DCR payroll.

# Employer/State Contributions – PERS

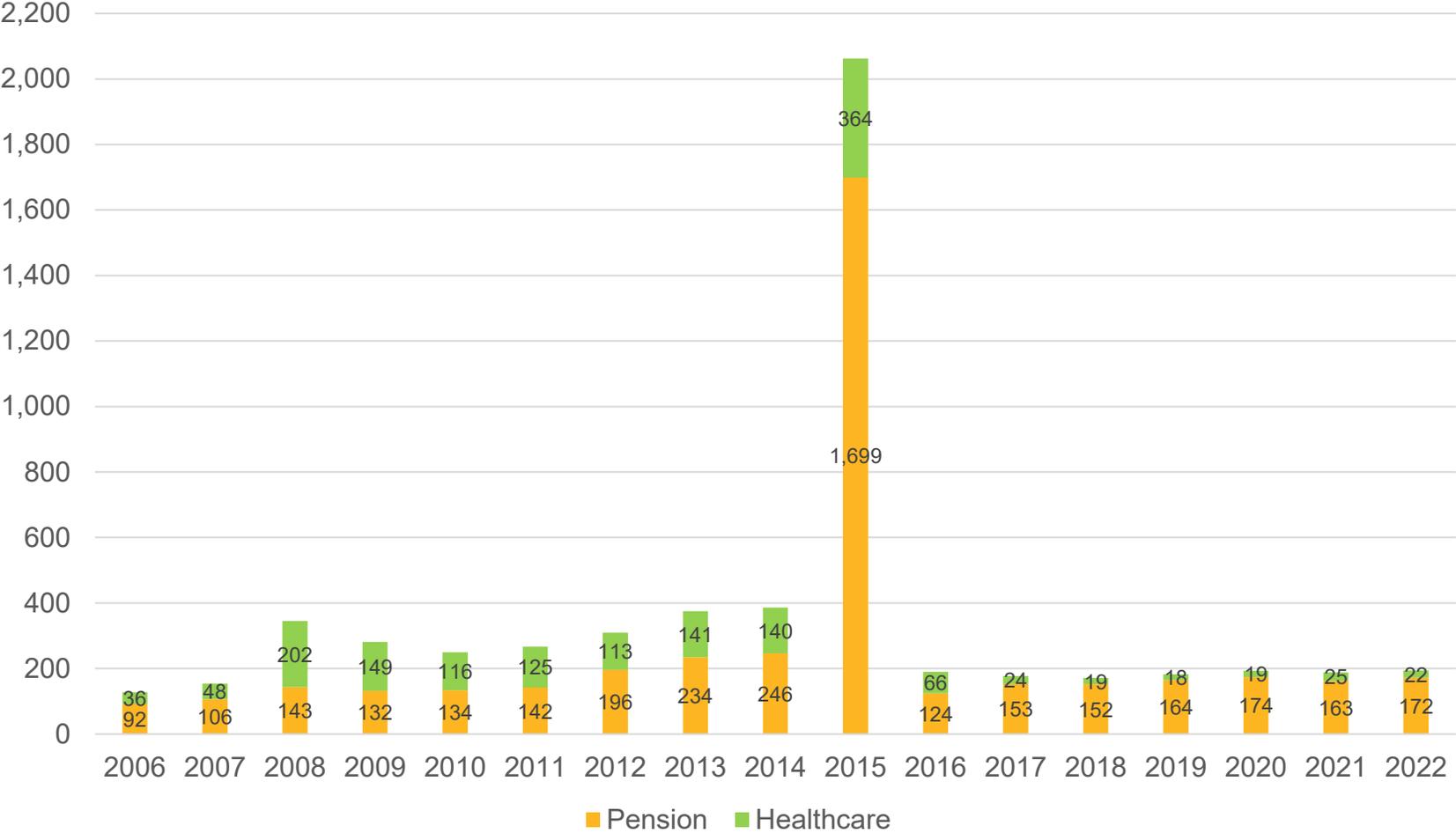
(\$millions)



The spike in 2015 is due to the \$1B Additional State Contribution that was made to PERS in FY15.

# Employer/State Contributions – TRS

(\$millions)

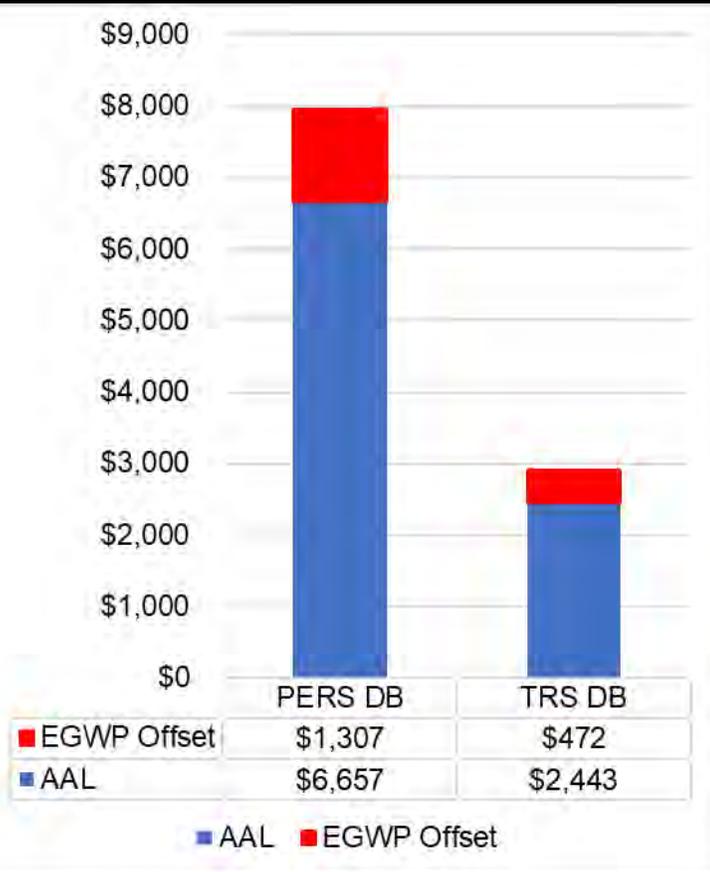


The spike in 2015 is due to the \$2B Additional State Contribution that was made to TRS in FY15.

# Inflation Reduction Act of 2022 (IRA 2022) Update

# FY22 AAL in \$Millions

EGWP subsidies are offsetting more than 16% of Liabilities



# EGWP Subsidies Impact on AAL

EGWP subsidies funded by the federal government and pharmaceutical manufacturers reduce the plans' liabilities.

	2021	2022		
<b>PERS DB (\$Millions)</b>	Valuation	Valuation	Change \$	Change %
AAL without EGWP	8,008	7,964	(44)	-0.5%
<b>EGWP Subsidy Offset \$</b>	<b>(1,152)</b>	<b>(1,307)</b>	<b>(155)</b>	<b>13.5%</b>
AAL with EGWP	6,856	6,657	(199)	-2.9%
<b>EGWP Subsidy Offset %</b>	<b>(14.4)%</b>	<b>(16.4)%</b>		

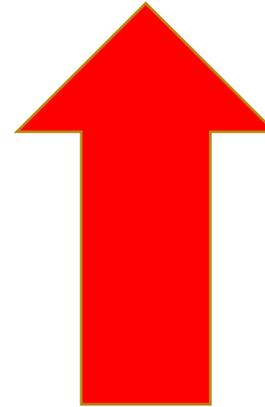
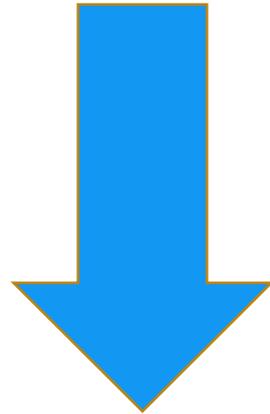
	2021	2022		
<b>TRS DB (\$Millions)</b>	Valuation	Valuation	Change \$	Change %
AAL without EGWP	2,841	2,914	73	2.6%
<b>EGWP Subsidy Offset \$</b>	<b>(401)</b>	<b>(472)</b>	<b>(70)</b>	<b>17.5%</b>
AAL with EGWP	2,440	2,443	3	0.1%
<b>EGWP Subsidy Offset %</b>	<b>(14.1)%</b>	<b>(16.2)%</b>		

Note: Amounts may differ due to rounding.

# Expected Impacts of IRA 2022 on EGWPs

## Good News

- Pharmaceutical companies required to pay rebates if drug prices rise faster than inflation starting in 2023.
- CMS to negotiate prices for top spend older Medicare drugs, first effective in 2026.
- Above changes suggest lowering long-term trend on Medicare Rx costs.



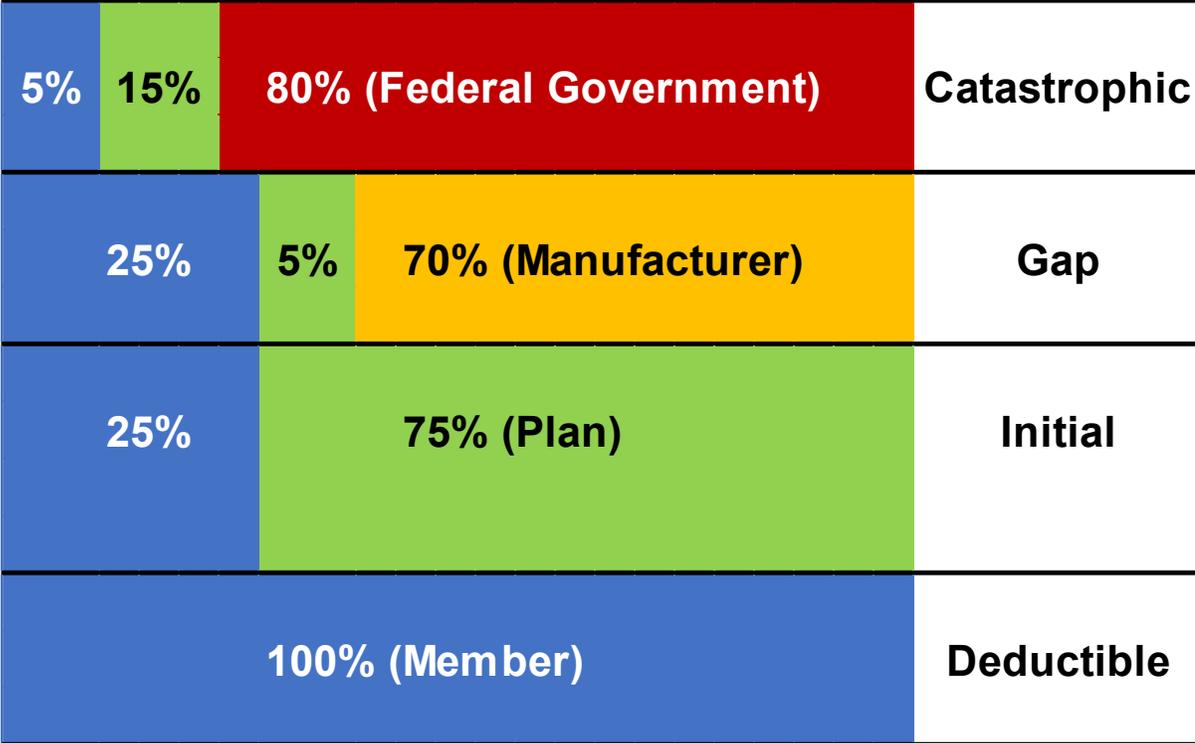
## Bad News

- Funding from external sources is expected to decline starting in 2025.
- Notably, funding from external sources will drop from 80% to 40% in the catastrophic coverage phase.
- Less EGWP subsidies will mean higher Medicare Rx costs starting in 2025.

# Standard Part D Design for Brand name Drugs

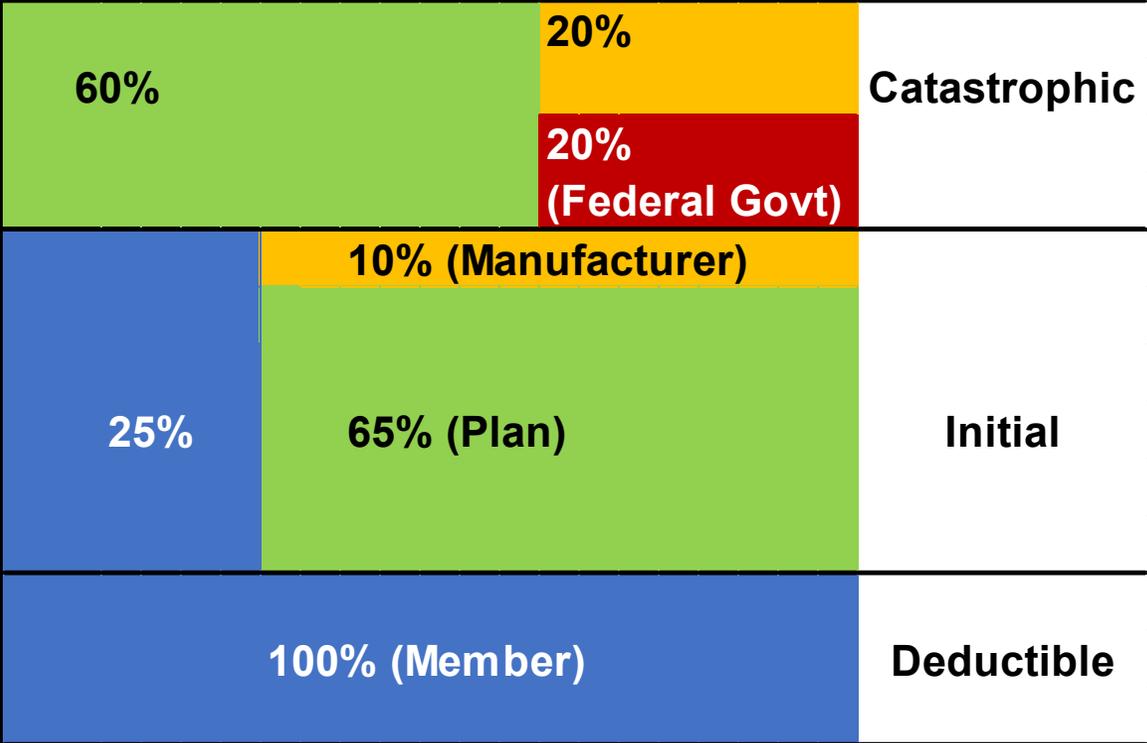
## Current

Coverage Phase

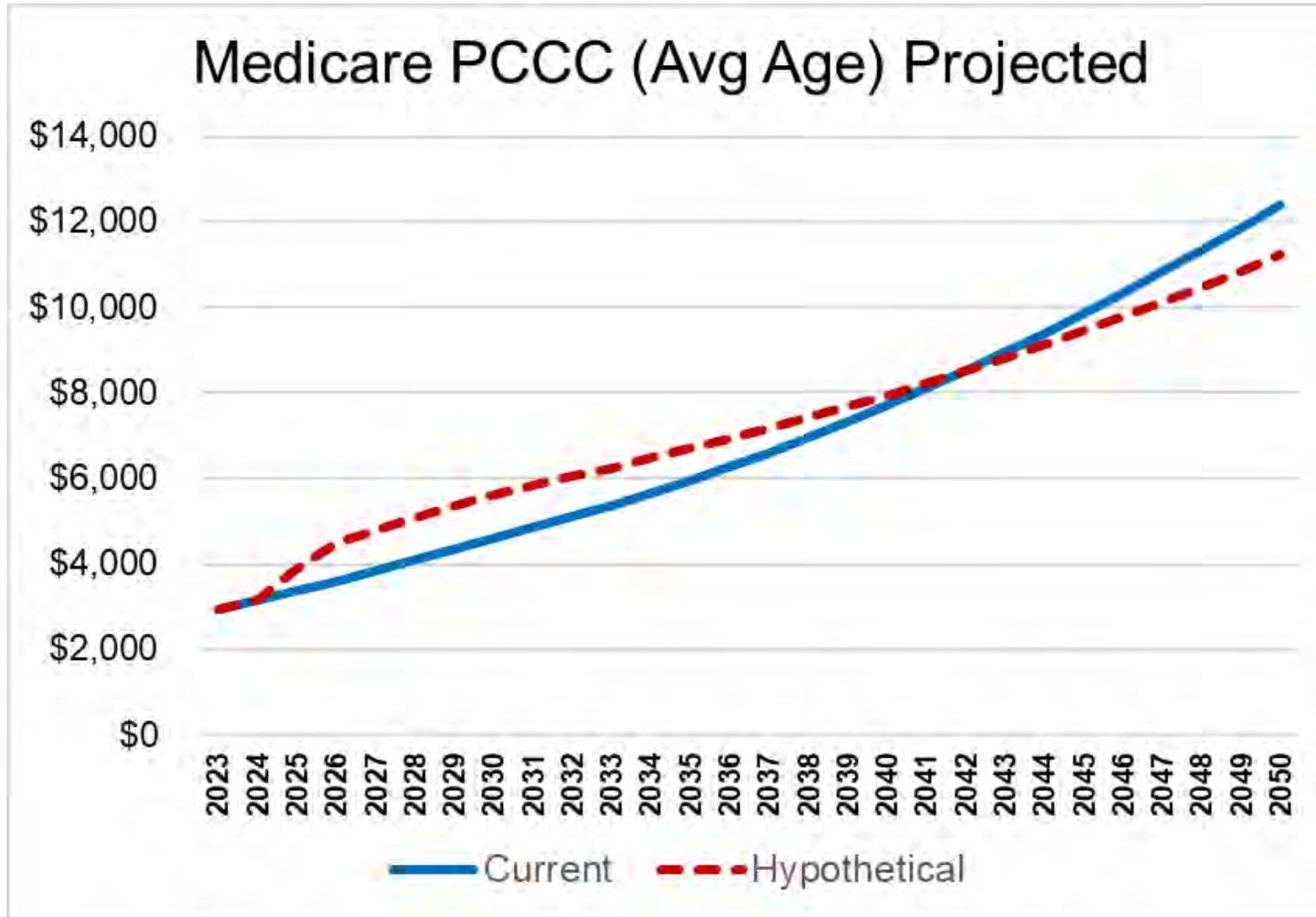


## 2025+

Coverage Phase



# Possible Measurement Approach



## Current:

- Medicare Rx costs projected at current assumed trend.
- Costs shown are for a Medicare member, reflecting current valuation EGWP subsidy offsets.

## Hypothetical (illustrative example):

- Assume net Medicare Rx costs will increase due to lost external financing in 2025. An increase of 25% is shown in this example.
- Assume long-term Medicare Rx and EGWP health trends will decline starting in 2026 due to CMS price control measures. An ultimate trend rate of 3.5% is assumed for FYE-2031 and later in this example.

# Next Steps

# Next Steps

- Complete the DCR, JRS and NGNMRS valuations
- Run projections of assets, liabilities and contributions for PERS and TRS
- Prepare draft valuation reports
- Discuss these items at the March meeting

# Actuarial Certification

# Actuarial Certification

The purpose of this presentation is to provide the ARMB Actuarial Committee with preliminary June 30, 2022 valuation results for discussion at the November 30, 2022 meeting. More complete valuation results will be presented at the March 15, 2023 meeting. This presentation should be considered part of the June 30, 2022 actuarial valuation report services.

The data, assumptions, methods, and plan provisions used to determine the results shown in this presentation are as shown in the June 30, 2022 actuarial valuation reports (draft reports will be provided within the next few weeks). The June 30, 2022 actuarial valuation reports will include details related to potential risks associated with the plans, and information regarding our use of models.

Where presented, references to “funded ratio” and “unfunded actuarial accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded actuarial accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e., purchase annuities) all or a portion of its liabilities.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law.

The results were prepared under the direction of David Kershner and Steve Oates, both of whom meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice.

David Kershner  
FSA, EA, MAAA, FCA  
Principal, Retirement

Stephen Oates  
ASA, EA, MAAA, FCA  
Principal, Health



## State of Alaska

## Timeline for June 30, 2022 Valuations (PERS, TRS, PERS DCR, TRS DCR, JRS, NGNMRS)

Item #	Task	Original Deadline	Revised Deadline	Date Completed	Team Responsible	Comments / Notes
1	Enrollment data request to Aetna	7/15/22		7/14/22	Buck	
2	Valuation data request to DRB	7/15/22		7/15/22	Buck	
3	Monthly audit discussion with GRS / Buck	7/20/22	7/22/22	7/22/22	GRS / Buck	
4	Monthly audit discussion with GRS / Buck	8/17/22	8/19/22	not needed	GRS / Buck	
5	Preliminary 6/30/22 assets to Buck	8/30/22		8/31/22	DRB	These will be used only for the adoption of FY24 contribution rates.
6	Valuation data to Buck	9/2/22		9/6/22	DRB	
7	Send valuation data files received from DRB to GRS	9/6/22		9/6/22	Buck	
8	<b>Actuarial Committee Meeting - FY24 contribution rates (based on 6/30/21 valuations)</b>	9/14/22		9/14/22	All	<b>Anchorage.</b> Deadline for meeting materials is 8/26 (extended to 9/6 since assets not available until the end of August).
9	Audit data and sample lives request to Buck	9/16/22		9/17/22	GRS	
10	Monthly audit discussion with GRS / Buck	9/21/22			GRS / Buck	
11	Claims data request to Segal/DRB	9/23/22		9/6/22	Buck	Incurred claims through 6/30/22 that are paid through 8/31/22.
12	Data questions to DRB	9/23/22		9/27/22	Buck	PERS data questions sent on 9/26, TRS sent on 9/27.
13	Data answers to Buck	10/7/22		10/7/22	DRB	
14	Final 6/30/22 assets to Buck	10/14/22		10/21/22	DRB	
15	Monthly audit discussion with GRS / Buck	10/19/22	10/21/22	10/21/22	GRS / Buck	
16	Claims data to Buck	10/21/22		10/24/22	Segal / DRB	Incurred claims through 6/30/22 that are paid through 8/31/22.
17	6/30/22 valuation data and DRB data questions to GRS	10/28/22		11/7/22	Buck	PERS pension/PERS DCR sent on 10/28, TRS pension/TRS DCR sent on 11/4, PERS/TRS OPEB sent on 11/7.
18	Sample life information to GRS	11/11/22		11/14/22	Buck	All except PERS pension active sample lives sent on 11/11. PERS pension active sent on 11/14.
19	Monthly audit discussion with GRS / Buck	11/16/22	11/18/22		GRS / Buck	
20	Preliminary valuation results and PVB's by individual to GRS	11/18/22			Buck	
21	<b>Actuarial Committee Meeting - 6/30/22 valuation results (preliminary)</b>	11/30/22			All	<b>Anchorage.</b> Deadline for meeting materials is 11/14.
22	Monthly audit discussion with GRS / Buck	12/21/22			GRS / Buck	
23	Draft DCR valuation reports to GRS	1/6/23			Buck	
24	Monthly audit discussion with GRS / Buck	1/18/23	1/20/23		GRS / Buck	
25	Draft DB valuation reports to GRS	1/20/23			Buck	
26	Monthly audit discussion with GRS / Buck	2/15/23	2/17/23		GRS / Buck	
27	Draft actuarial review report to Buck	3/7/23			GRS	
28	Monthly audit discussion with GRS / Buck	3/15/23	3/8/23		GRS / Buck	
29	<b>Actuarial Committee Meeting - 6/30/22 valuation results (full), projections, draft valuation reports</b>	3/15/23			All	<b>Juneau.</b> Deadline for meeting materials is 2/24.
30	Monthly audit discussion with GRS / Buck	4/19/23			GRS / Buck	
31	<b>ARMB Meeting - follow-up to March meeting (if needed)</b>	April 2023 - TBD			All	<b>Teleconference.</b>
32	Monthly audit discussion with GRS / Buck	5/17/23			GRS / Buck	
33	<b>Actuarial Committee Meeting - final valuation reports</b>	6/14/23			All	<b>Anchorage.</b> Deadline for meeting materials is 5/26.

Note: All deadline and completion dates are specific to PERS and TRS.

December 1, 2022



## **ARMB Board Meeting**

Preliminary Investment Performance  
Periods Ended September 30, 2022

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**Steve Center, CFA**  
Senior Vice President

**Ivan “Butch” Cliff, CFA**  
Executive Vice President and Director of  
Research

**Paul Erlendson**  
Senior Vice President

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# Agenda

- Market and Economic Environment
  
- Total Fund Performance
  - Participant-Directed Plans
  - Defined Benefit Plans
  - DB Plans Major Asset Classes

# Equity and Fixed Income Markets Both Fell Again in 3Q22

Negative returns for stocks and bonds at the same time for three quarters are extremely unusual

## Global equity markets down sharply in each quarter, starting with Russian invasion

- Similar impact year-to-date across all equity market segments: developed, emerging, small cap

## Fixed income down with sharply higher inflation and interest rates

- Bloomberg Aggregate: -14.6% year-to-date, worst 9 months ever for the index
- CPI-U: +8.2% for the year ended 3Q22

## Number of times stocks and bonds have been down together

- 38 quarters in almost 100 years, about 10% of the quarters
- But just twice on annual basis

## Inflation spiked to highest rate in decades

## Economic data show growth hit ‘pause’

- GDP rose 2.6% in 3Q22 after falling in both 2Q22 and 1Q22; expect another loss in 4Q
- Forecasters have cut growth estimates for 2022 to below 0%, and to 1.5% for 2023.

Returns for Periods ended 9/30/22

	1 Quarter	Year to Date	1 Year	5 Years	10 Years	25 Years
<b>U.S. Equity</b>						
Russell 3000	-4.46	-24.62	-17.63	8.62	11.39	7.48
S&P 500	-4.88	-23.87	-15.47	9.24	11.70	7.45
Russell 2000	-2.19	-25.10	-23.50	3.55	8.55	6.73
<b>Global ex-U.S. Equity</b>						
MSCI World ex USA	-9.20	-26.23	-23.91	-0.39	3.62	3.69
MSCI Emerging Markets	-11.57	-27.16	-28.11	-1.80	1.05	--
MSCI ACWI ex USA Small Cap	-8.37	-29.37	-28.93	-0.56	4.44	5.64
<b>Fixed Income</b>						
Bloomberg Aggregate	-4.75	-14.61	-14.60	-0.27	0.89	4.02
90-day T-Bill	0.46	0.61	0.62	1.15	0.68	1.92
Bloomberg Long Gov/Credit	-9.03	-28.94	-27.41	-1.17	1.35	5.51
Bloomberg Global Agg ex-US	-8.85	-23.88	-24.77	-4.03	-2.39	2.42
<b>Real Estate</b>						
NCREIF Property	3.23	12.25	19.15	9.19	9.76	9.51
FTSE Nareit Equity	-9.94	-28.13	-16.41	2.93	6.26	7.73
<b>Alternatives</b>						
CS Hedge Fund Index	0.35	0.14	1.08	4.53	4.35	5.87
Cambridge Private Equity*	-5.60	-2.04	3.34	18.22	15.90	14.75
Bloomberg Commodity	-4.11	13.57	11.80	6.96	-2.14	1.47
Gold Spot Price	-7.49	-8.56	-4.84	5.41	-0.59	6.62
<b>Inflation - CPI-U</b>	0.17	6.46	8.20	3.76	2.52	2.47

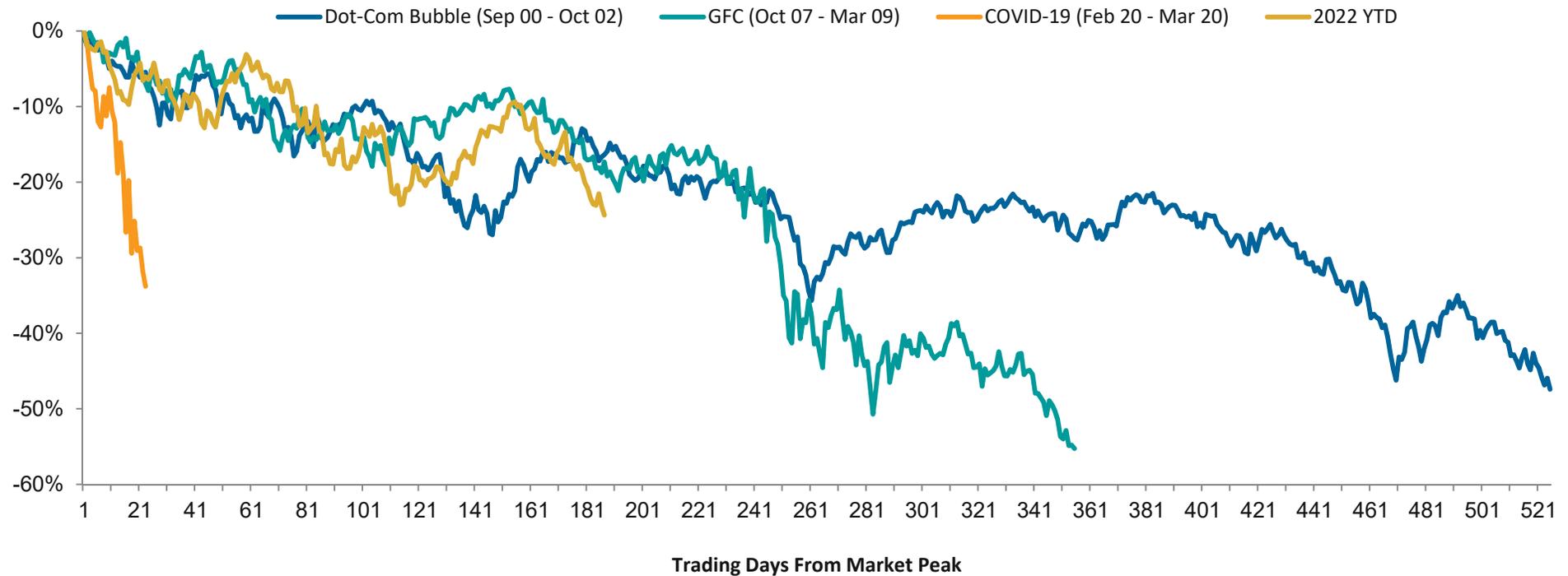
\*Cambridge PE data through 06/30/22.

Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

# 2022 Equity Drawdown: A More 'Typical' Correction?

## S&P 500 Cumulative Returns

### Market Peak-to-Trough for Recent Corrections vs. 2022 YTD Through 09/30/22

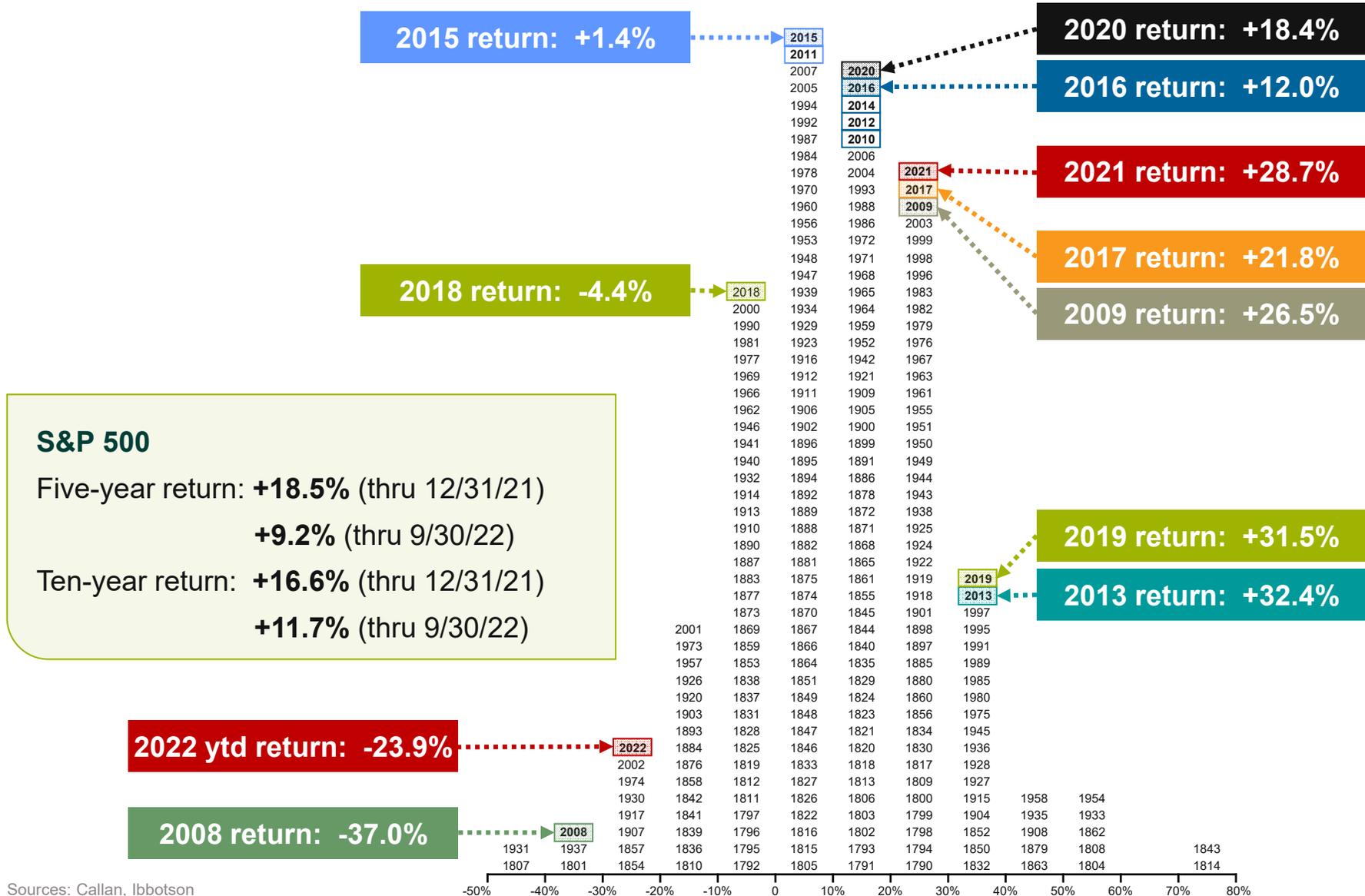


- While the COVID correction was swift and intense, so far the 2022 correction resembles the GFC and Dot-Com Bubble.
- The 2022 drawdown has been 187 trading days through September.
- It would take another 168 trading days to get to the bottom of the GFC and 338 trading days to get to the bottom of the Tech Bubble.

Sources: Callan, S&P Dow Jones Indices

# Stock Market Returns by Calendar Year

2022 YTD performance in perspective: History of the U.S. stock market (233 years of returns)

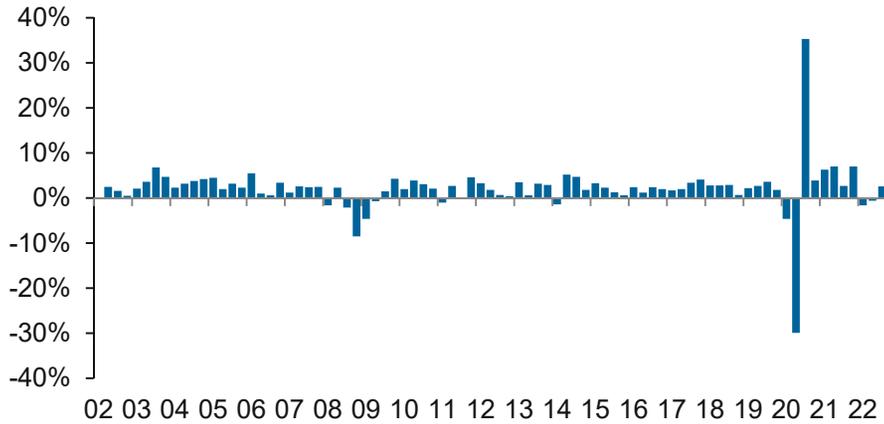


Sources: Callan, Ibbotson

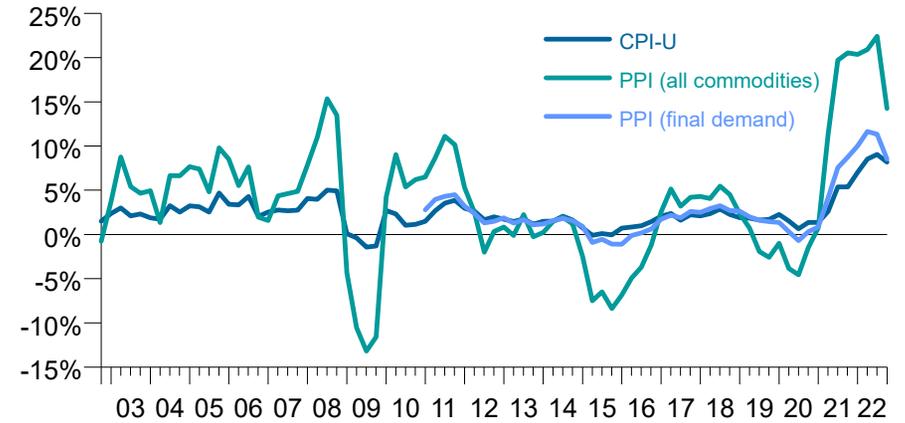
# U.S. Economy—Summary

For periods ended 9/30/22

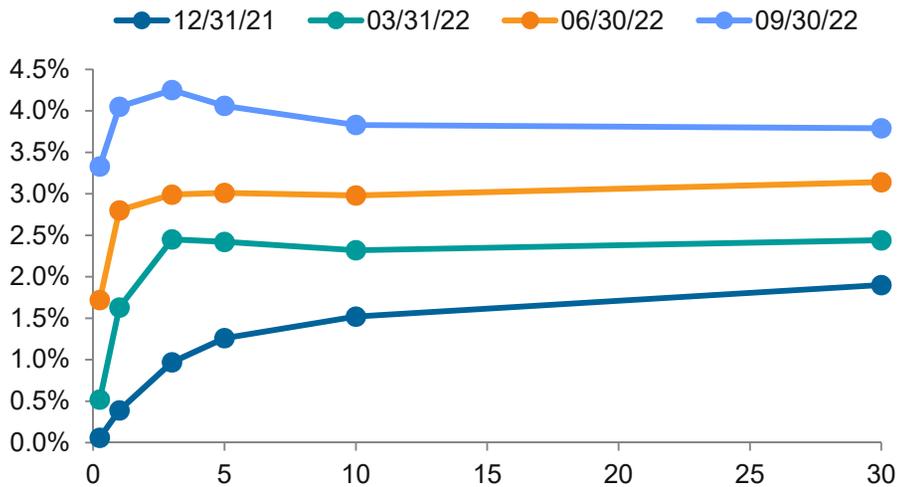
### Quarterly Real GDP Growth



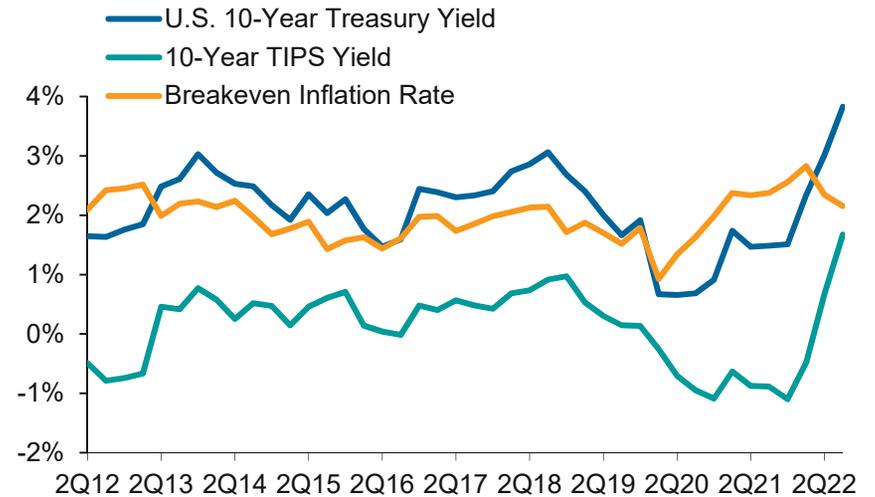
### Inflation Year-Over-Year



### U.S. Treasury Yield Curves



### Historical 10-Year Yields Through 9/30/22



Sources: Bloomberg, Bureau of Labor Statistics, Callan

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## Recession Watch

### Common definition of recession: two consecutive quarters of decline in GDP

- Actual definition: The National Bureau of Economic Research (NBER) Business Cycle Dating Committee defines a recession as “a significant decline in economic activity that is spread across the economy and that lasts more than a few months.”

### Indicators to watch

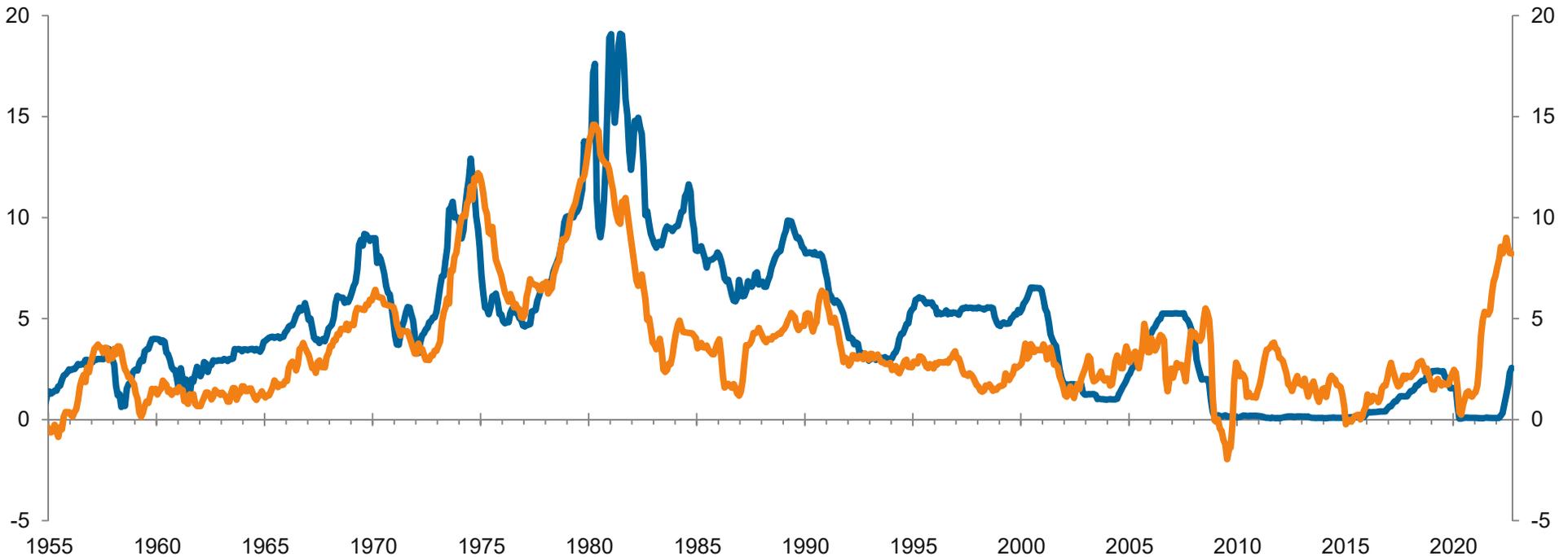
- GDP declined in 1Q and 2Q22, the proverbial two-quarters-in-a-row rule of thumb that often indicates recession.
  - However, GDP rose 2.6% in 3Q, reversing the trend, but consensus estimates show another modest decline in 4Q
- Housing market is weakening with more than a doubling of mortgage rates since the start of 2022.
- Job market remains strong, with substantial job creation year to date; job listings remain larger than the number of seekers.
  - Initial unemployment claims are creeping up: a leading indicator.
- PMI is showing initial signs of recession in the Business Activity and Output indices; PMI is also a leading indicator.
- Exports have weakened with slowing growth overseas, geopolitical uncertainty, and a strong dollar.
- Inflation remains historically high, sapping purchasing power and eroding confidence.
- Federal Reserve is committed to raising interest rates to combat inflation; median Fed Funds projection is 4.4% by end of 2022.
- Fed’s resolve may be tested if economy slows sharply in the fourth quarter or the first half of 2023.

# Inflation vs. Interest Rates Over the Long Term

## Federal Funds vs. Consumer Price Index

● Federal Funds Effective Rate

● Consumer Price Index: All Urban Consumers, All Items for U.S.



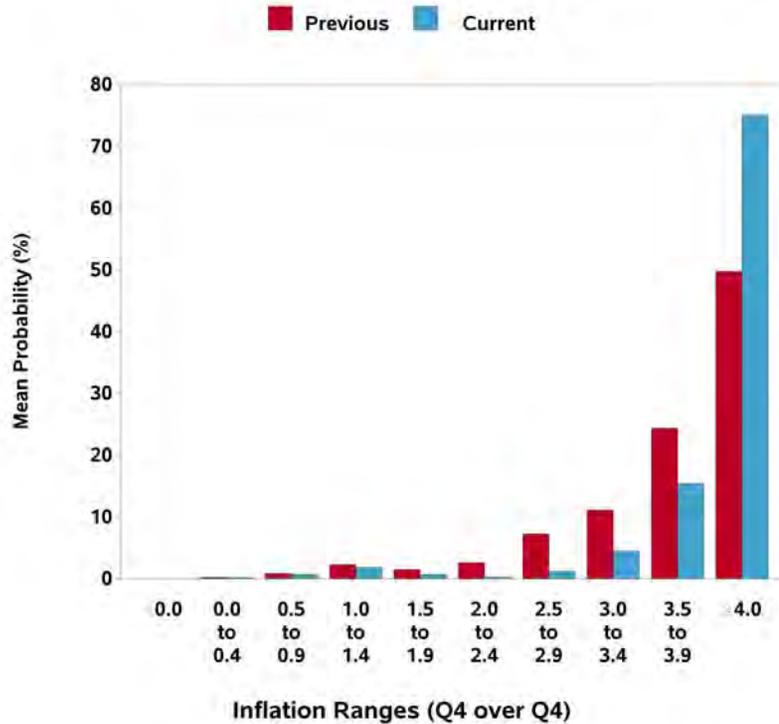
- We are now looking at an inflation spike that is above the last rise in inflation from 2005–08.
- The gap between inflation and the Fed Funds rate is larger than that seen just before the GFC.
  - History suggests that the Fed Funds rate is typically above inflation, not below it.
- The 9/30/22 gap of 8.2% CPI vs. 2.6% Fed Funds rate is unprecedented in the history of the CPI-U, going back to 1955
  - Resolution to the historic relationship requires the Fed Funds rate to rise and inflation to fall.

Source: Federal Reserve Bank of St. Louis

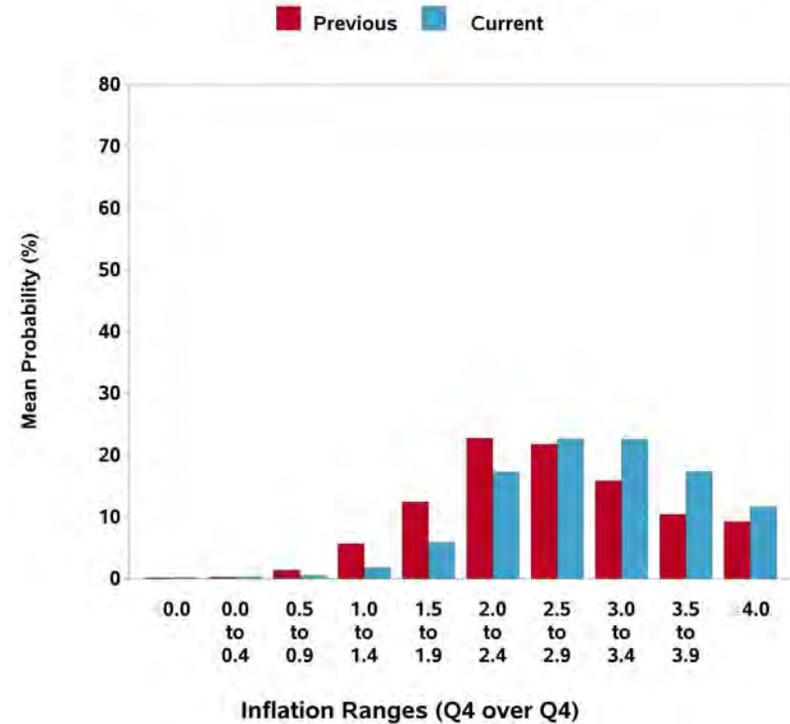
# Inflation Forecasts: Survey of Professional Forecasters, Short Term

## PCE inflation

Mean Probabilities for Core PCE Inflation in 2022



Mean Probabilities for Core PCE Inflation in 2023



2022 inflation forecasts have risen substantially since the 1Q22 survey.

- Inflation above 4% now forecast with about a 75% probability

First round of forecasts for 2023 are lower than for 2022.

- 2.5% to 2.9% the highest probability scenario, in a close tie with 3.0% to 3.4%

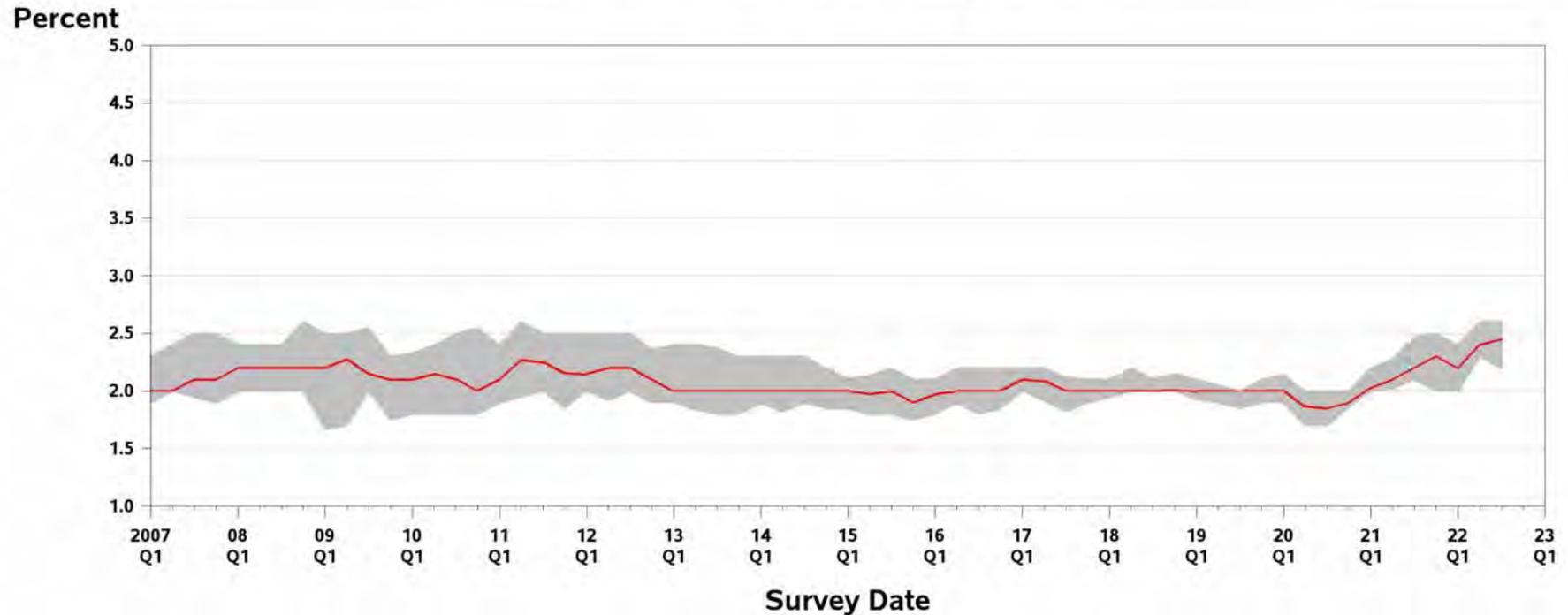
Still some bias to higher levels

Source: Philadelphia Federal Reserve, Survey of Professional Forecasters

# Inflation Forecasts: Survey of Professional Forecasters, 10-Year Horizon

PCE inflation

## Projections for the 10-Year Annual-Average Rate of PCE Inflation (Median and Interquartile Range)



Ten-year forecasts for inflation have risen since the start of 2021, but the most recent survey is still below 2.5%.

Source: Philadelphia Federal Reserve, Survey of Professional Forecasters

# Callan Periodic Table of Investment Returns – Trailing Year

Monthly Returns												Trailing Year
Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Last 12 Mos.
Large Cap Equity	U.S. Fixed Income	Real Estate	Emerging Market Equity	Small Cap Equity	Real Estate	High Yield	Dev ex-U.S. Equity	U.S. Fixed Income	Small Cap Equity	Emerging Market Equity	High Yield	High Yield
7.01%	0.30%	6.33%	-1.89%	1.07%	4.47%	-3.56%	0.83%	-1.57%	10.44%	0.42%	-3.97%	-14.14%
Real Estate	Large Cap Equity	Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	High Yield	Large Cap Equity	U.S. Fixed Income	U.S. Fixed Income	Global ex-U.S. Fixed Income	Large Cap Equity	Small Cap Equity	U.S. Fixed Income	U.S. Fixed Income
5.98%	-0.69%	5.08%	-1.96%	-1.03%	3.71%	-3.79%	0.64%	-4.50%	9.22%	-2.05%	-4.32%	-14.60%
Small Cap Equity	Global ex-U.S. Fixed Income	Large Cap Equity	U.S. Fixed Income	Global ex-U.S. Fixed Income	Small Cap Equity	Real Estate	Emerging Market Equity	Emerging Market Equity	Real Estate	High Yield	Global ex-U.S. Fixed Income	Large Cap Equity
4.25%	-0.72%	4.48%	-2.15%	-1.11%	1.24%	-5.48%	0.44%	-6.64%	7.96%	-2.30%	-5.87%	-15.47%
Dev ex-U.S. Equity	High Yield	Small Cap Equity	High Yield	U.S. Fixed Income	Dev ex-U.S. Equity	Emerging Market Equity	High Yield	High Yield	High Yield	U.S. Fixed Income	Large Cap Equity	Real Estate
2.98%	-0.97%	2.23%	-2.73%	-1.12%	1.16%	-5.56%	0.25%	-6.73%	5.90%	-2.83%	-9.21%	-22.78%
Emerging Market Equity	Real Estate	Emerging Market Equity	Dev ex-U.S. Equity	Dev ex-U.S. Equity	High Yield	Dev ex-U.S. Equity	Large Cap Equity	Small Cap Equity	Dev ex-U.S. Equity	Large Cap Equity	Dev ex-U.S. Equity	Small Cap Equity
0.99%	-2.24%	1.88%	-4.41%	-1.56%	-1.15%	-6.57%	0.18%	-8.22%	4.97%	-4.08%	-9.26%	-23.50%
U.S. Fixed Income	Emerging Market Equity	High Yield	Large Cap Equity	Real Estate	Emerging Market Equity	Global ex-U.S. Fixed Income	Small Cap Equity	Large Cap Equity	U.S. Fixed Income	Dev ex-U.S. Equity	Small Cap Equity	Dev ex-U.S. Equity
-0.03%	-4.08%	1.87%	-5.17%	-2.47%	-2.26%	-6.83%	0.15%	-8.25%	2.44%	-4.67%	-9.58%	-23.91%
High Yield	Small Cap Equity	Global ex-U.S. Fixed Income	Real Estate	Emerging Market Equity	U.S. Fixed Income	Large Cap Equity	Global ex-U.S. Fixed Income	Real Estate	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	Emerging Market Equity	Global ex-U.S. Fixed Income
-0.17%	-4.17%	-0.07%	-5.75%	-2.99%	-2.78%	-8.72%	0.01%	-8.69%	1.92%	-4.99%	-11.72%	-24.77%
Global ex-U.S. Fixed Income	Dev ex-U.S. Equity	U.S. Fixed Income	Small Cap Equity	Large Cap Equity	Global ex-U.S. Fixed Income	Small Cap Equity	Real Estate	Dev ex-U.S. Equity	Emerging Market Equity	Real Estate	Real Estate	Emerging Market Equity
-0.39%	-4.68%	-0.26%	-9.63%	-2.99%	-3.20%	-9.91%	-4.35%	-9.41%	-0.25%	-6.49%	-12.42%	-28.11%

Sources: ● Bloomberg Aggregate ● Bloomberg Corp High Yield ● Bloomberg Global Aggregate ex US ● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

# Callan Periodic Table of Investment Returns – Trailing Fiscal Years

## Fiscal Year Returns – Ending June 30

06/2014	06/2015	06/2016	06/2017	06/2018	06/2019	06/2020	06/2021	06/2022	2023 to Date
Large Cap Equity 24.61%	Large Cap Equity 7.42%	Real Estate 11.58%	Small Cap Equity 24.60%	Small Cap Equity 17.57%	Large Cap Equity 10.42%	U.S. Fixed Income 8.74%	Small Cap Equity 62.03%	U.S. Fixed Income -10.29%	High Yield -0.65%
Dev ex-U.S. Equity 23.83%	Small Cap Equity 6.49%	Global ex-U.S. Fixed Income 11.24%	Emerging Market Equity 23.75%	Large Cap Equity 14.37%	U.S. Fixed Income 7.87%	Large Cap Equity 7.51%	Emerging Market Equity 40.90%	Large Cap Equity -10.62%	Small Cap Equity -2.19%
Small Cap Equity 23.64%	U.S. Fixed Income 1.86%	U.S. Fixed Income 6.00%	Dev ex-U.S. Equity 19.49%	Emerging Market Equity 8.20%	Real Estate 7.68%	Global ex-U.S. Fixed Income 0.71%	Large Cap Equity 40.79%	High Yield -12.81%	U.S. Fixed Income -4.75%
Emerging Market Equity 14.31%	Real Estate -0.36%	Large Cap Equity 3.99%	Large Cap Equity 17.90%	Dev ex-U.S. Equity 7.04%	High Yield 7.48%	High Yield 0.03%	Dev ex-U.S. Equity 33.60%	Real Estate -13.45%	Large Cap Equity -4.88%
Real Estate 13.55%	High Yield -0.40%	High Yield 1.62%	High Yield 12.70%	Real Estate 5.64%	Global ex-U.S. Fixed Income 4.10%	Emerging Market Equity -3.39%	Real Estate 33.55%	Dev ex-U.S. Equity -16.76%	Global ex-U.S. Fixed Income -8.85%
High Yield 11.73%	Emerging Market Equity -5.12%	Small Cap Equity -6.73%	Real Estate 0.21%	Global ex-U.S. Fixed Income 2.78%	Dev ex-U.S. Equity 1.29%	Dev ex-U.S. Equity -5.42%	High Yield 15.37%	Global ex-U.S. Fixed Income -18.78%	Dev ex-U.S. Equity -9.20%
Global ex-U.S. Fixed Income 9.42%	Dev ex-U.S. Equity -5.28%	Dev ex-U.S. Equity -9.84%	U.S. Fixed Income -0.31%	High Yield 2.62%	Emerging Market Equity 1.22%	Small Cap Equity -6.63%	Global ex-U.S. Fixed Income 4.60%	Small Cap Equity -25.20%	Emerging Market Equity -11.57%
U.S. Fixed Income 4.37%	Global ex-U.S. Fixed Income -13.19%	Emerging Market Equity -12.05%	Global ex-U.S. Fixed Income -3.80%	U.S. Fixed Income -0.40%	Small Cap Equity -3.31%	Real Estate -16.25%	U.S. Fixed Income -0.33%	Emerging Market Equity -25.28%	Real Estate -11.58%

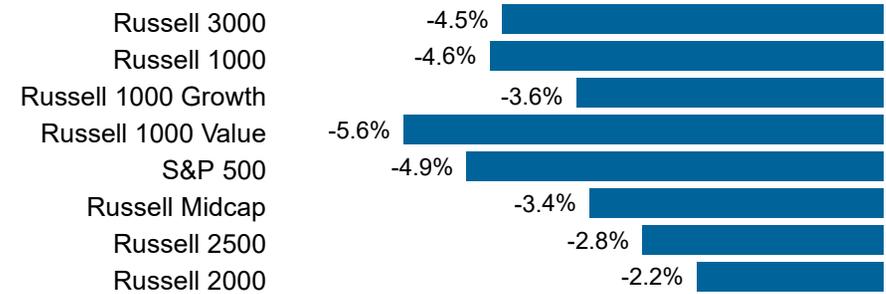
Sources: ● Bloomberg Aggregate ● Bloomberg Corp High Yield ● Bloomberg Global Aggregate ex US ● FTSE EPRA Nareit Developed  
● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

# U.S. Equity Performance: 3Q22

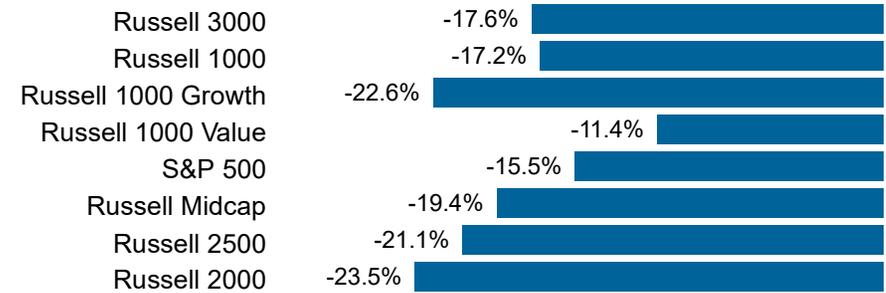
## Challenging market conditions persist

- The S&P 500 Index dropped by 5% in 3Q22; all major U.S. indices across styles and market cap ranges were negative in the quarter, except for the Russell 2000 Growth Index, which was up 0.24%.
- During the quarter, all sectors posted negative returns, except for Energy (+2%) and Consumer Discretionary (+4%). The quarterly return for Consumer Discretionary was aided by an exceptional July in which it was up over 18%. Returns posted by Real Estate and Communication Services were the worst, -11% and -13%, respectively.
- Small cap (Russell 2000) outpaced large cap (Russell 1000) and growth outperformed value during the quarter, a reversal of what we've seen in previous quarters this year.
- Continued concerns around inflation and a potential recession, along with geopolitical headlines, contributed to a volatile and risk-averse environment.

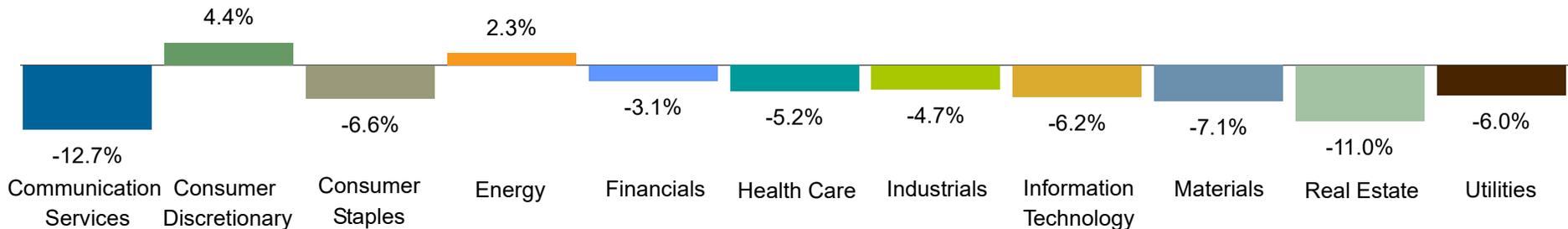
### U.S. Equity: Quarterly Returns as of 9/30/22



### U.S. Equity: One-Year Returns as of 9/30/22



### Industry Sector Quarterly Performance (S&P 500) as of 9/30/22



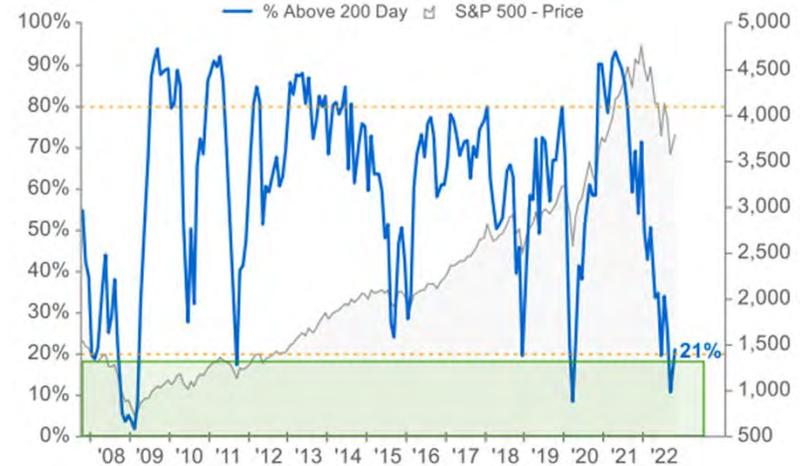
Sources: FTSE Russell, S&P Dow Jones Indices

# U.S. Equity Overview

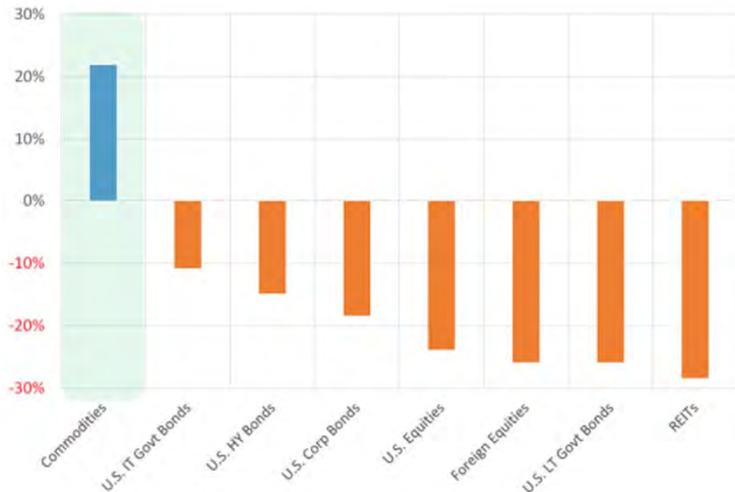
No place to hide, even within equities, for investors

- The pullback of the U.S. equity markets and broadness of the selloff were reminiscent of other periods marked by bearish sentiment, such as 2008 (Global Financial Crisis) and 2020 (start of pandemic).
- Inflation and interest rates kept pressuring the markets. While some inflationary data (particularly around energy) seemed to soften, other data points (food, shelter, and services) stayed elevated.
- U.S. equity did not provide a safe haven for investors. Like other asset classes, it has not generated YTD positive returns and continues to be overshadowed by the outsized outperformance of commodities.

Stocks Above the 200-Day Moving Average – A Gauge of Investor Sentiment

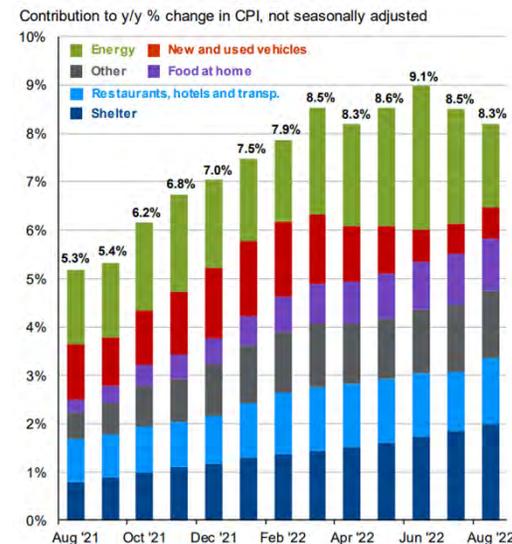


YTD Commodities Returns vs Other Asset Classes as of 9/30/22



Source: JP Morgan, Westfield, Factset

Rate of Change Within Contributors to Headline Inflation



# Global/Global ex-U.S. Equity Performance: 3Q22

## Global market turmoil

Global and global ex-U.S. equity markets waned for three consecutive quarters due to inflation, rising rates, and fears of a global recession.

### Geopolitical and macro factors plague the market

- Political instability in Italy and the U.K. as a result of prime minister departures weighed on the market.
- U.K. equities lost confidence as its newly elected prime minister, Liz Truss, announced her economic policy.
- China’s COVID-19 lockdowns and growing concerns around the property sector sapped sentiment and economic activity.

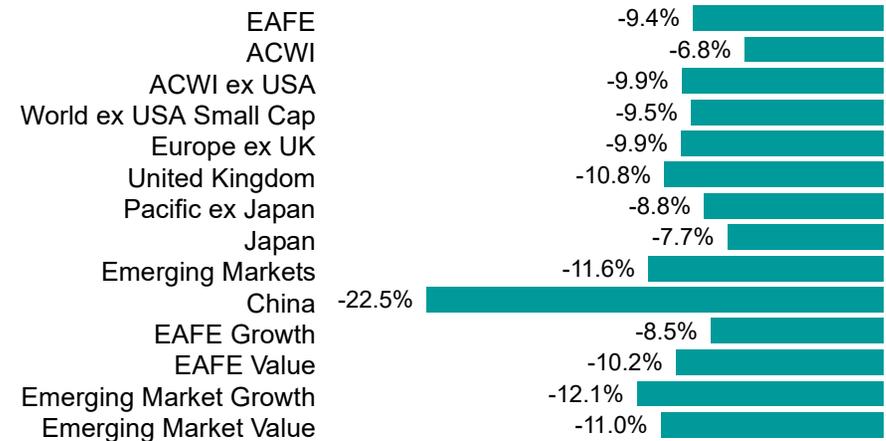
### Growth vs. value

- Growth outpaced value in developed markets but lagged value in emerging markets.
- Rate-sensitive sectors in developed markets (e.g., Communication Services and Real Estate) were challenged given the tightening cycle by global central banks.
- Profitability of Chinese internet companies has compressed due to lockdowns and regulation, and cyclical downturn in electronics weakened Taiwan and Korean semiconductors.

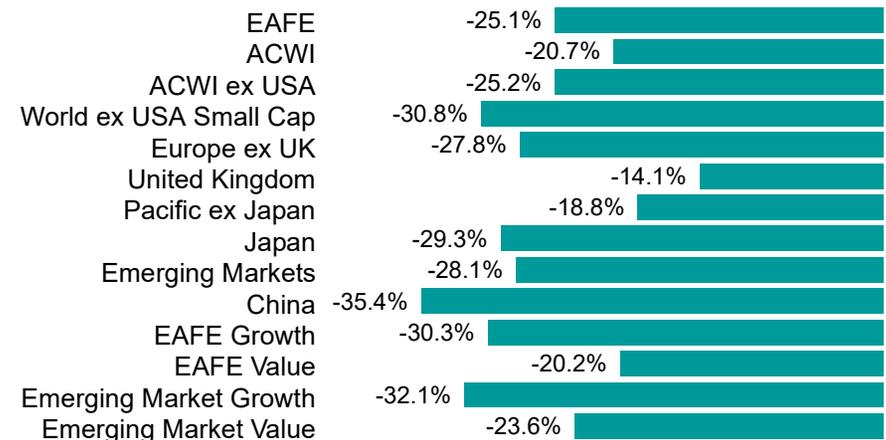
### U.S. dollar vs. other currencies

- Growth and interest rate differentials as well as its safe haven status have fueled the U.S. dollar to a multi-decade high.
- The dollar gained vs. the euro and the yen by about 6%.

### Global Equity: Quarterly Returns as of 9/30/22



### Global Equity: One-Year Returns as of 9/30/22



Source: MSCI

# U.S. Fixed Income Performance: 3Q22

## Bonds hit hard as rates rose sharply (again)

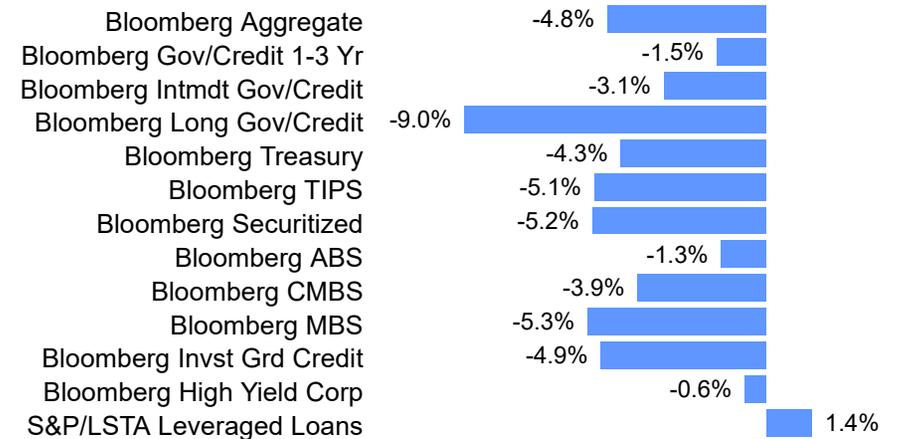
- Bloomberg US Aggregate worst nine-month return in its history
  - As are trailing 1, 3, 5 and 10-year returns!
  - 10-year return for Aggregate a mere 0.9%
- Yield curve inverted at quarter-end; 2-year at 4.22%, 10-year at 3.83%.
- 10-year hit 4% briefly in late September; first time since 2009.
- TIPS underperformed nominal Treasuries and 10-year breakeven spreads fell to 2.11% from 2.33% as of 6/30/22.
- Fed raised rates by 150 bps during the quarter, bringing target to 3.0% to 3.25%.
  - Median expectation from Fed is 4.4% at year-end and 4.6% at the end of 2023.
  - Longer-term expectations are much lower.
- Volatility climbed to levels not seen since early 2020.

## Spread sectors underperformed

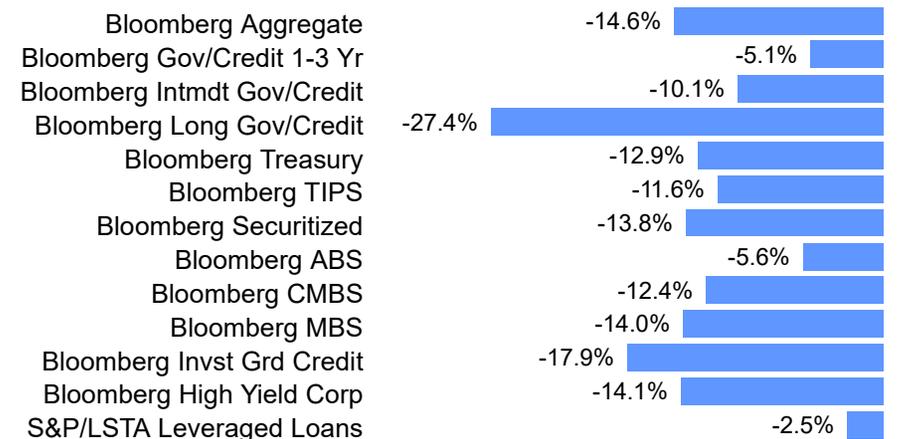
- Mortgages had worst month ever vs. like-duration U.S. Treasuries in September; underperformed by 169 bps for 3Q
- Corporates also produced negative returns; the Bloomberg Corp yield-to-worst reached 5.7%.
- High yield fared better and loans gained.
  - Bloomberg HY Corp yield-to-worst 9.7%

Sources: Bloomberg, S&P Dow Jones Indices

## U.S. Fixed Income: Quarterly Returns as of 9/30/22



## U.S. Fixed Income: One-Year Returns as of 9/30/22

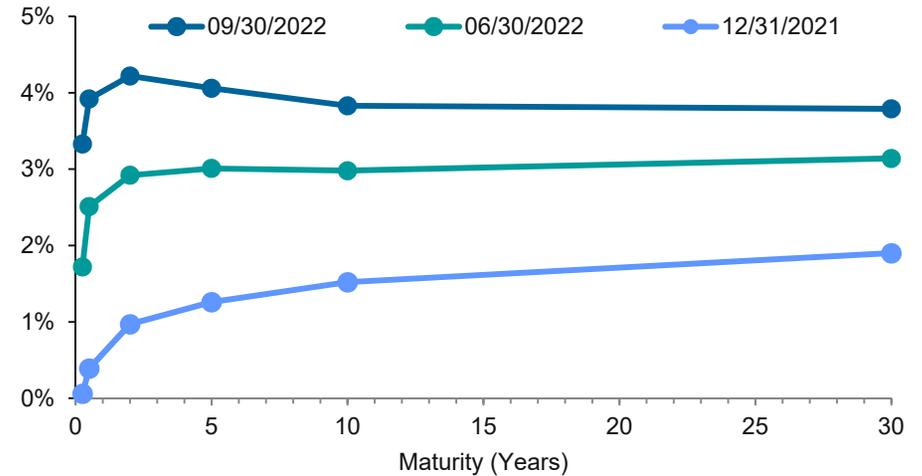


# Fixed Income Themes

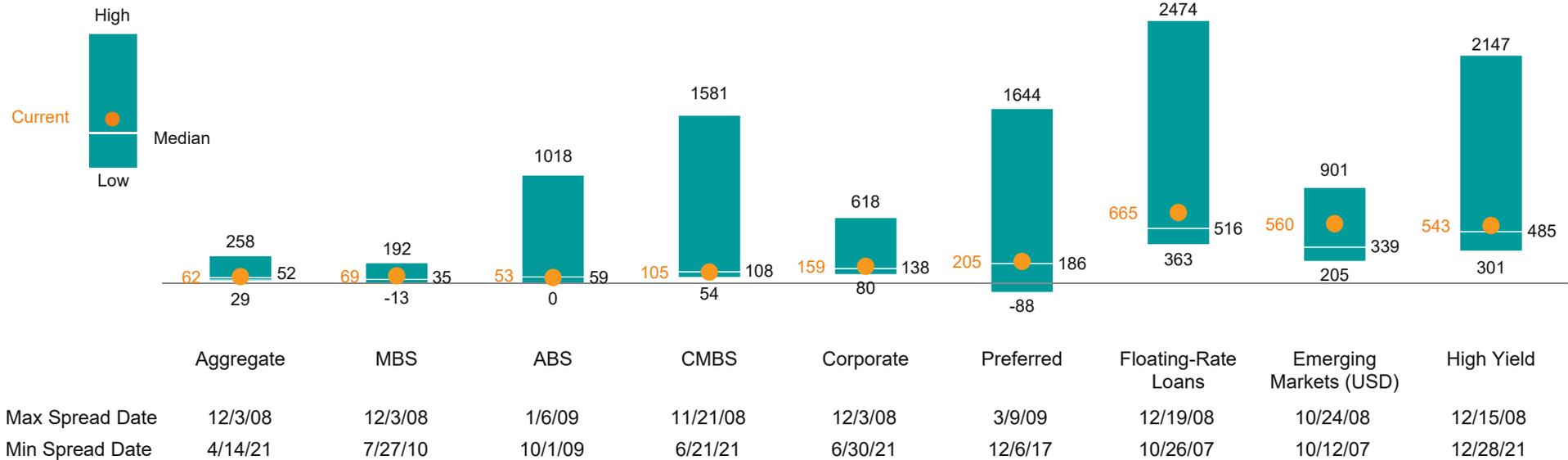
Yields have been a key driver in this year's historic bond market decline

- The yield curve has risen precipitously since the end of 2021, putting pressure on rate-sensitive sectors.
- Spread levels have widened, particularly within lower-quality credit, but in aggregate remain closer to historical averages.
- A silver lining of the rise in rates is cash yielding over 3% and the 2-year maturity yielding over 4%. Additionally, investors may not have to stretch too far into lower-quality credits to find attractive yields.

U.S. Treasury Yield Curve



Spread Levels Relative to History (as of 9/30/22)



Sources: Bloomberg, Morgan Stanley

# U.S. Private Real Estate Performance: 3Q22

Appreciation returns turn negative, as sector returns are mixed

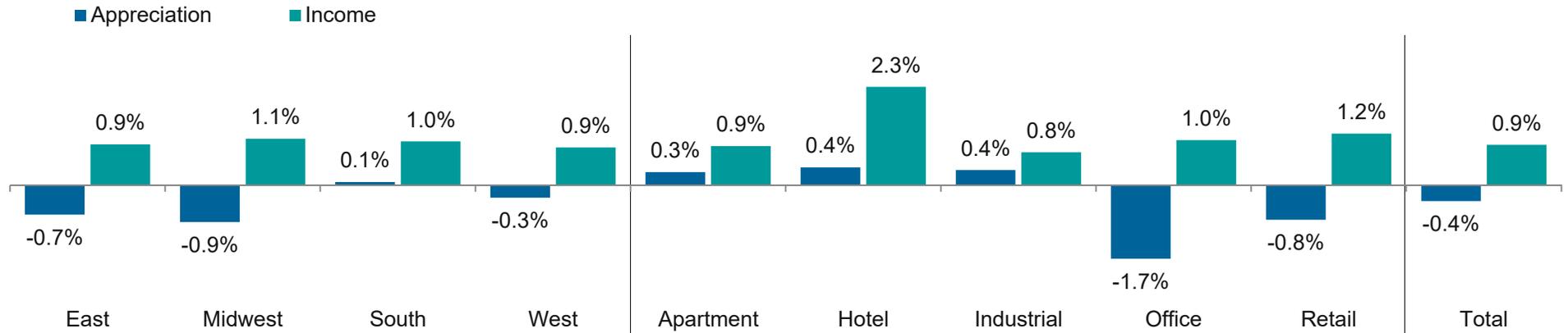
Income rose, but appreciation declined

- Income returns were positive across sectors.
- Valuations are reflective of strong fundamentals in Industrial and Apartment and continued uncertainty in Office and Retail.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios, and increased borrowing costs are impacting values.
- Niche sectors such as self-storage and life sciences continued to be accretive.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>NCREIF ODCE</b>	0.3%	21.0%	11.4%	9.3%	9.9%
Income	0.6%	2.7%	3.0%	3.1%	3.5%
Appreciation	-0.3%	17.9%	8.2%	6.0%	6.3%
<b>NCREIF Property Index</b>	0.6%	16.1%	9.9%	8.6%	9.5%
Income	0.9%	4.0%	4.2%	4.3%	4.7%
Appreciation	-0.4%	11.8%	5.6%	4.2%	4.6%

Returns are geometrically linked

## NCREIF Property Index Quarterly Returns by Region and Property Type

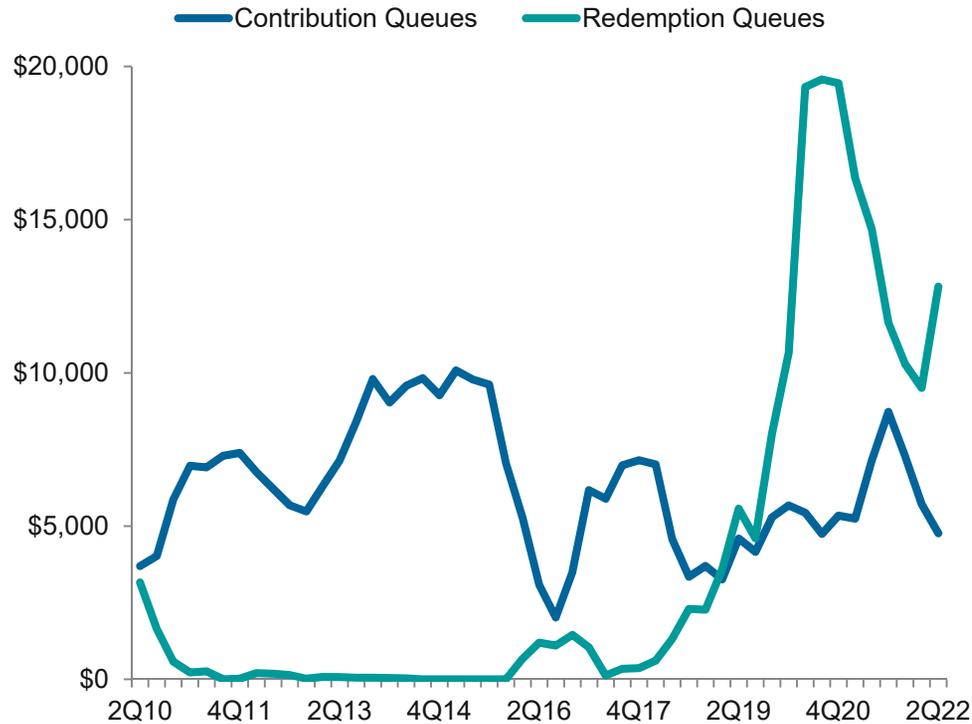


Source: NCREIF, ODCE return is net

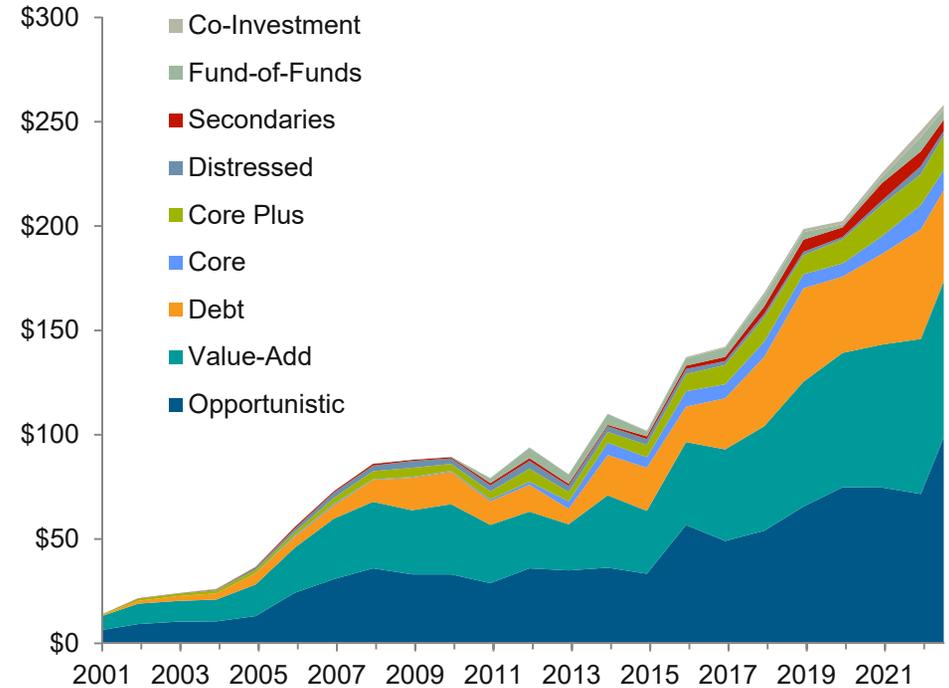
# U.S. Private Real Estate Market Trends

Dry powder exceeds \$200 billion

Core Fund Contribution/Redemption Queues (\$mm)\*



Dry Powder for CRE Investment in North America (\$bn)



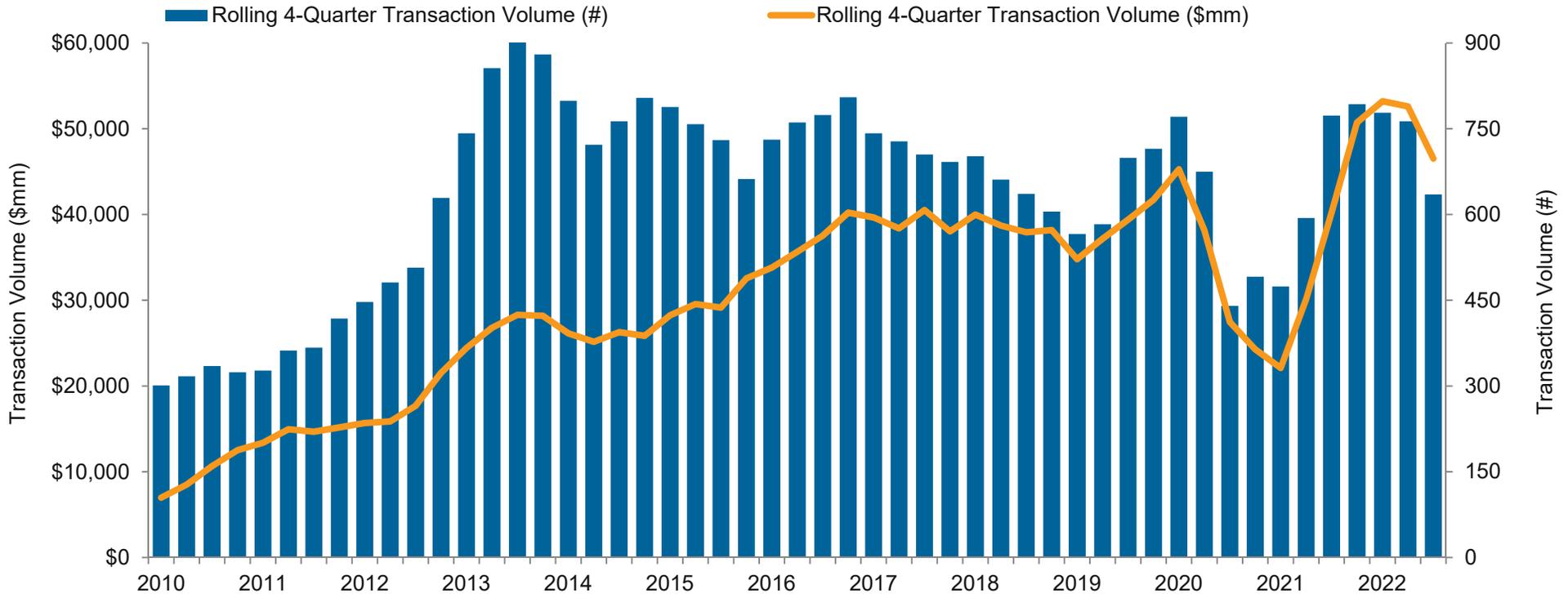
- Net core activity down in back-to-back quarters; investors rebalancing due to the denominator effect
- >\$200 billion of capital waiting to be deployed in North America
- Majority of dry powder capital in opportunistic, value-add, and debt funds

Sources: AEW, NCREIF, Preqin  
\*Queue data as of 3Q22

# U.S. Private Real Estate Market Trends

## Pricing and transaction volumes fell slightly in 3Q22

NCREIF Rolling 4-Quarter Transaction Totals Through 9/30/22



- Transaction volume continues to decrease but remains above its five-year average. Multi-family and Industrial assets are leading the transaction market, with trades above pre-COVID-19 levels, primarily due to the presence of strong credit tenants.
- Some re-trades of assets are occurring due to market volatility induced by increased borrowing costs, in some cases resulting in lower values in transactions.
- Bid-ask spread continues to widen in the transaction market as price discovery is occurring. In some cases assets are being pulled from the market.

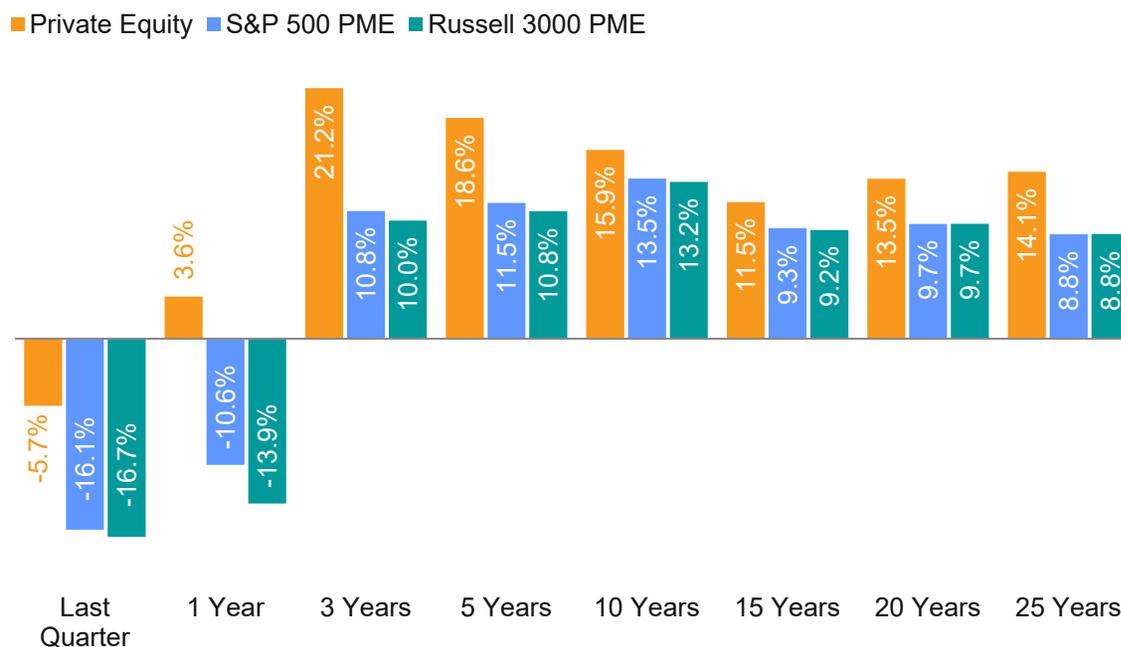
Source: NCREIF

# Private Equity Performance

## Smoothing effect in 2Q22 private equity returns

- As is typical for the asset class, private equity returns have experienced a smoothing effect in 2022 compared to the sharp declines seen in the public markets.
- Private equity only down about a third as much as the public markets during 2Q22, on a PME basis.
- Portfolio companies are typically valued internally by the manager on a quarterly basis. Valuations are based on the operating metrics of the company, recent comparable transactions, and public market comps.
- Venture capital and growth equity experienced the sharpest declines so far this year, given their technology focus as well as post-IPO public equity holdings.

Net IRRs as of 06/30/22



Net IRRs by Strategy as of 06/30/22

Strategy	Last Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Venture Capital	-8.54	0.77	29.19	25.16	19.53	12.14
Growth Equity	-7.65	-3.13	21.41	19.68	16.12	14.06
Buyouts	-4.53	5.41	19.69	17.64	15.80	14.52
Mezzanine	-0.51	9.31	12.05	11.89	11.57	11.00
Credit Opportunities	-1.73	5.37	7.92	7.39	8.78	9.78
Control-Oriented Distressed	-1.07	20.46	19.95	14.45	13.35	12.02
<b>Total Private Equity</b>	<b>-5.65</b>	<b>3.56</b>	<b>21.15</b>	<b>18.63</b>	<b>15.93</b>	<b>13.50</b>

Source: Refinitiv/Cambridge

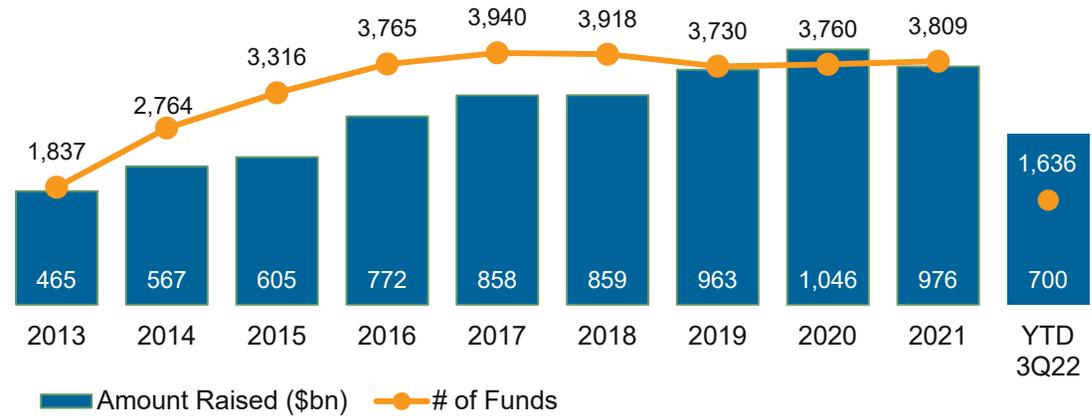
# Private Equity Overview

## Fundraising slows and timelines become extended

### Fundraising

- In terms of dollars raised, fundraising only down 2% so far in 2022, compared to the same point the prior year
- Significantly fewer funds have closed this year, however, with fundraising concentrated in larger funds: “flight to quality”
- Fundraising timelines extending due to so many funds in the market, slowing distributions, and constrained LP commitment budgets because of the “denominator effect,” delaying many final closes

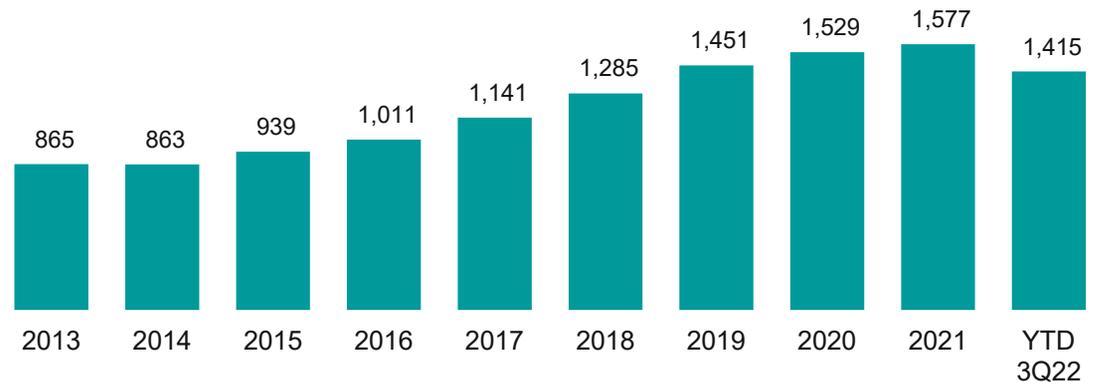
Annual Fundraising



### Dry powder

- Level of dry powder influenced by two factors: fundraising and capital deployment
- Dry powder around \$1.5-1.6 trillion in 2020 and 2021 due to consistent annual fundraising levels
- Dry powder not yet finalized for 2022, but may drop due to slower fundraising environment and slower capital deployment

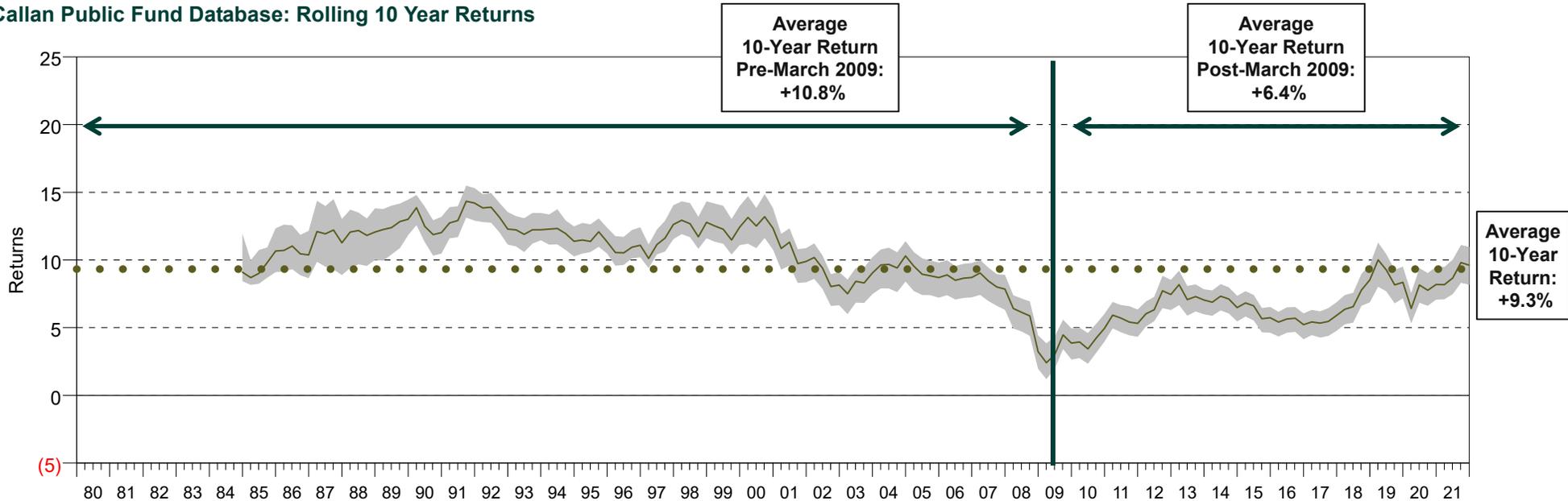
Dry Powder (\$bn)  
Cumulative as of Year-end



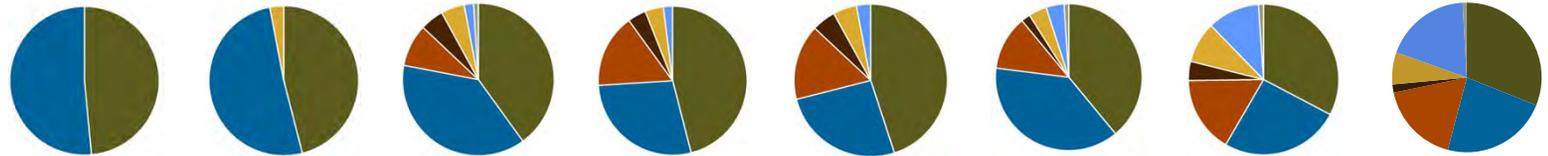
Source: PitchBook

# Historical Public Fund Asset Allocation and Returns

Callan Public Fund Database: Rolling 10 Year Returns



10 Year Return 10.7% 12.0% 11.4% 12.4% 8.7% 5.0% 5.7% 9.7%



Asset Class	1985	1990	1995	2000	2005	2010	2015	2021
Domestic Equity	49%	46%	40%	46%	45%	39%	33%	31%
Domestic Fixed Income	52%	51%	38%	28%	26%	30%	26%	23%
Non-U.S. Equity			9%	16%	16%	15%	16%	18%
Non-U.S. Fixed Income			5%	4%	5%	4%	4%	2%
Real Estate		3%	5%	4%	5%	4%	9%	7%
Other Alternatives			2%	2%	3%	7%	11%	19%
Cash Equivalents			1%			1%	1%	1%

Allocations are as of December 31 of the applicable year except the current year which is September 30.

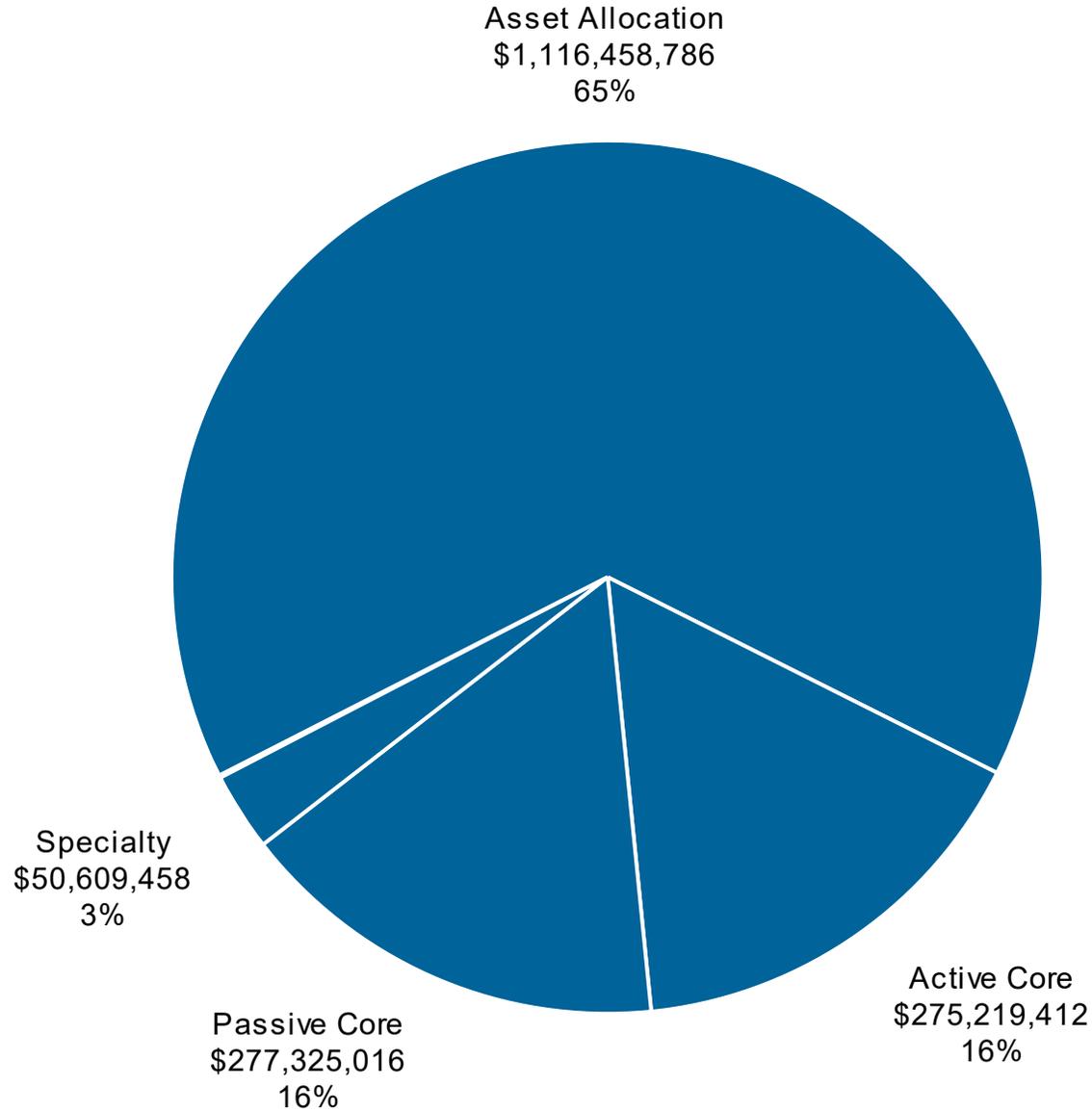
Callan

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**Participant-Directed Plans**

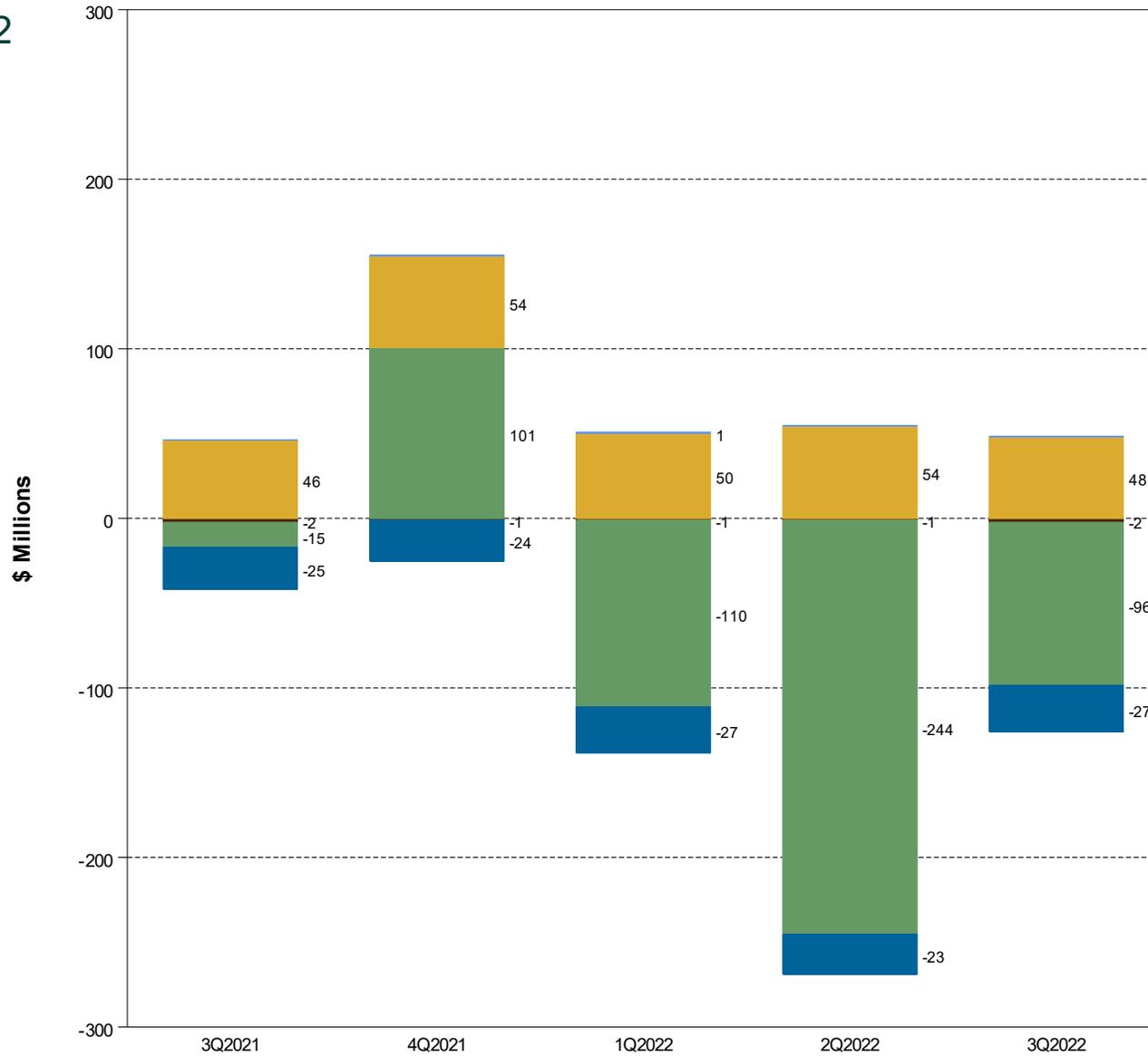
# PERS DC Plan

September 30, 2022



# PERS DC Plan: Asset Changes

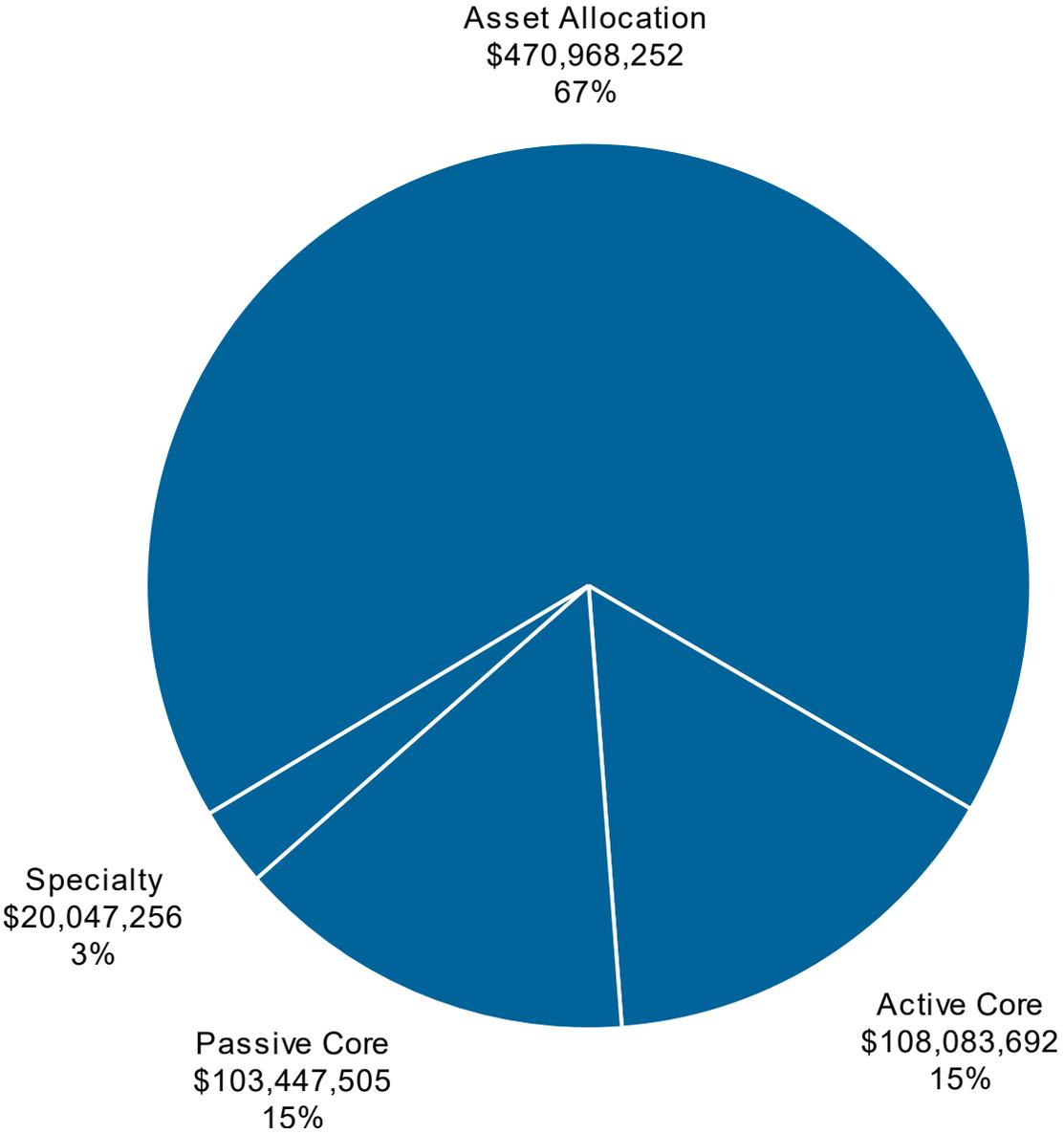
September 30, 2022



■ Other Outflows 
 ■ Withdrawals/Distributions 
 ■ Other Inflows 
 ■ Contributions 
 ■ Investment Gains/Losses 
 ■ Loans 
 ■ Fees

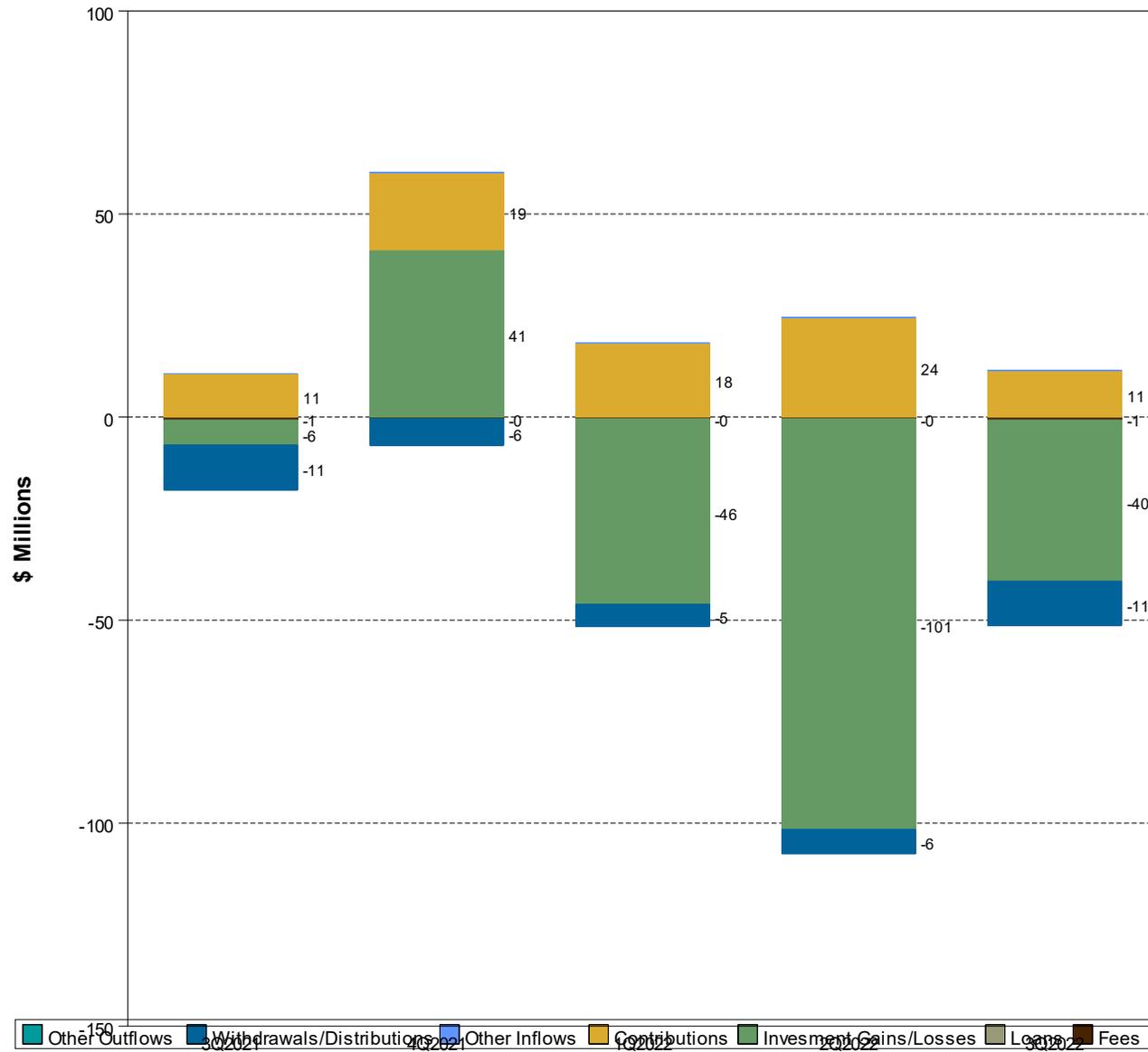
# TRS DC Plan

September 30, 2022



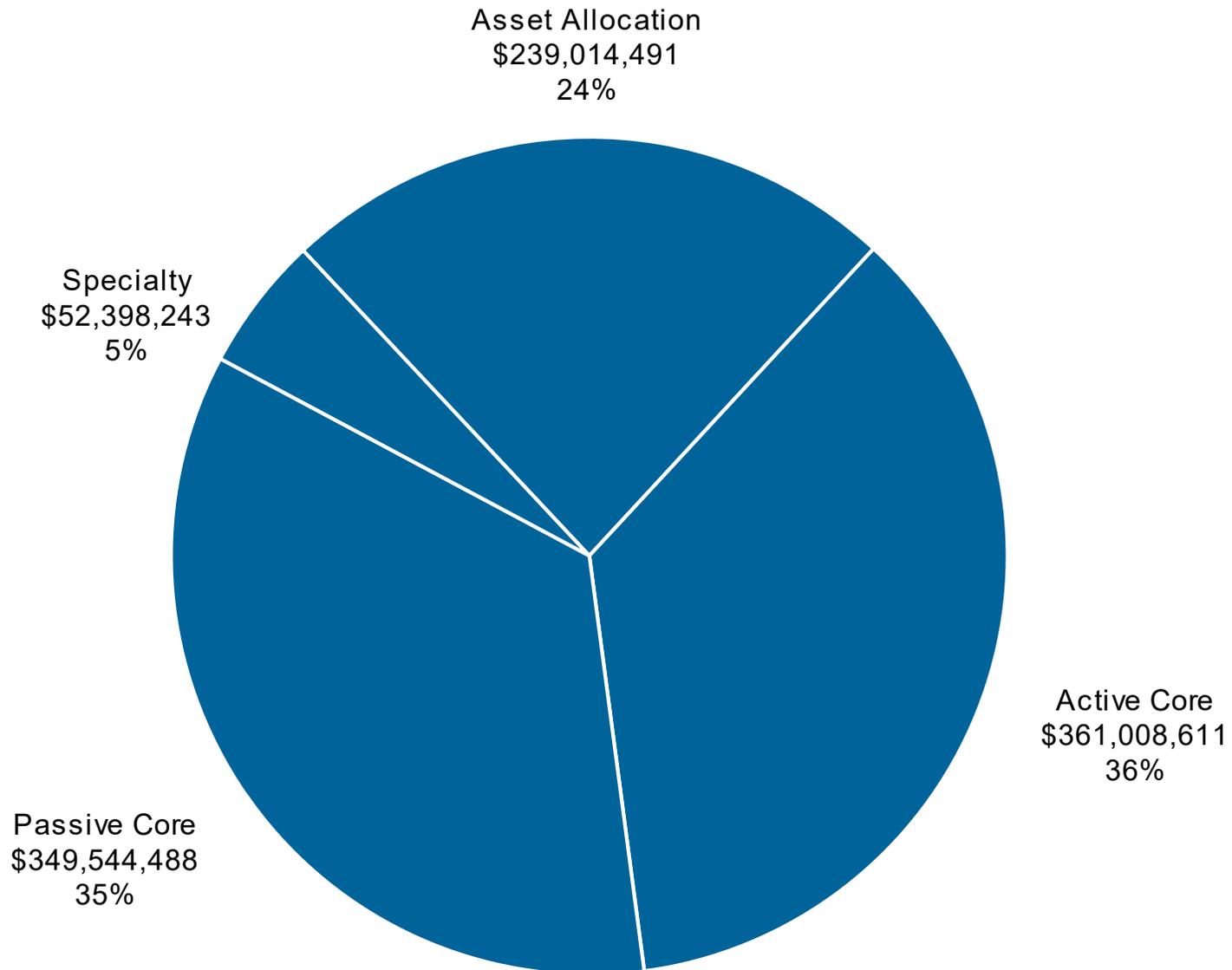
# TRS DC Plan: Asset Changes

September 30, 2022



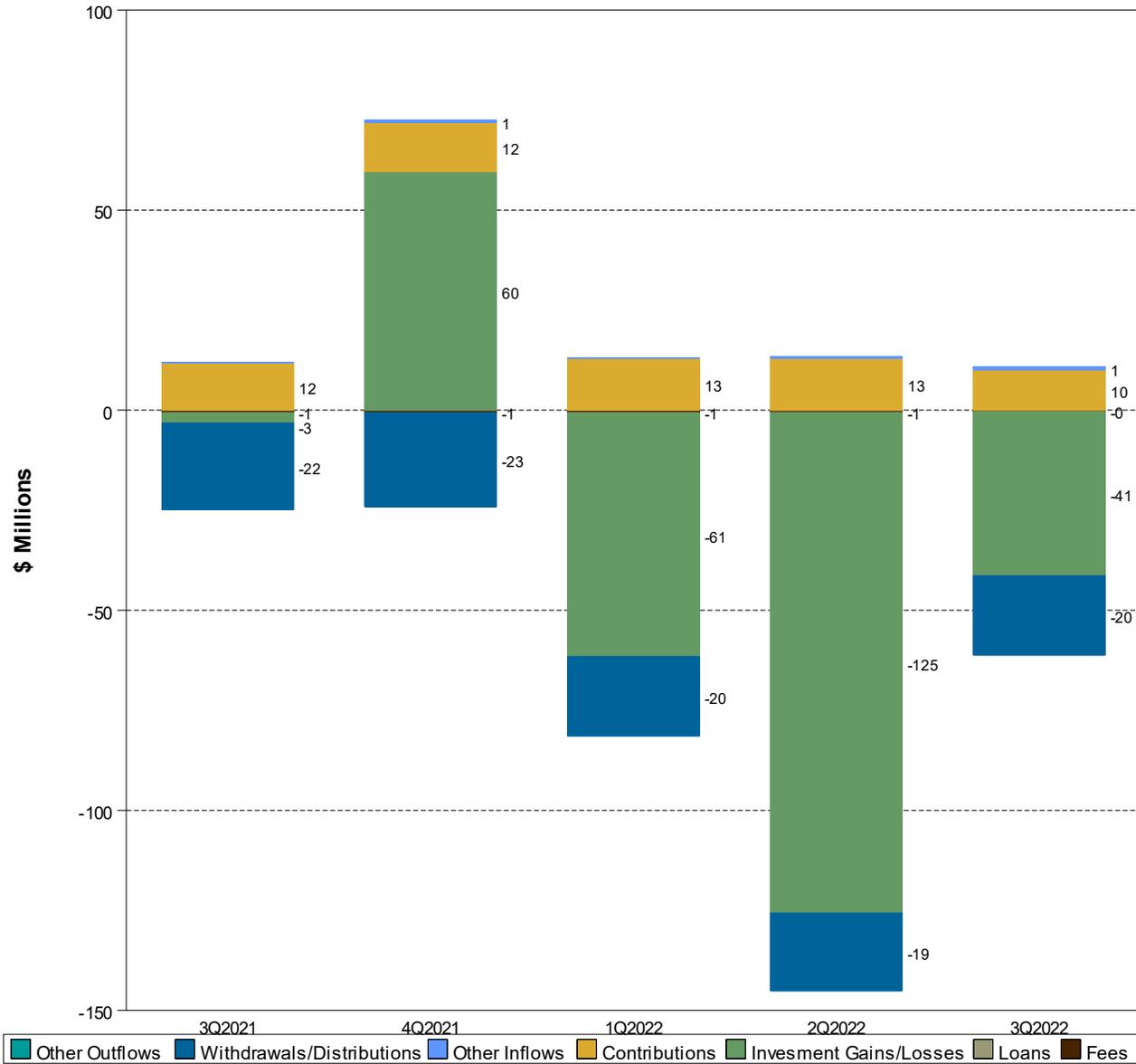
# Deferred Comp Plan

September 30, 2022



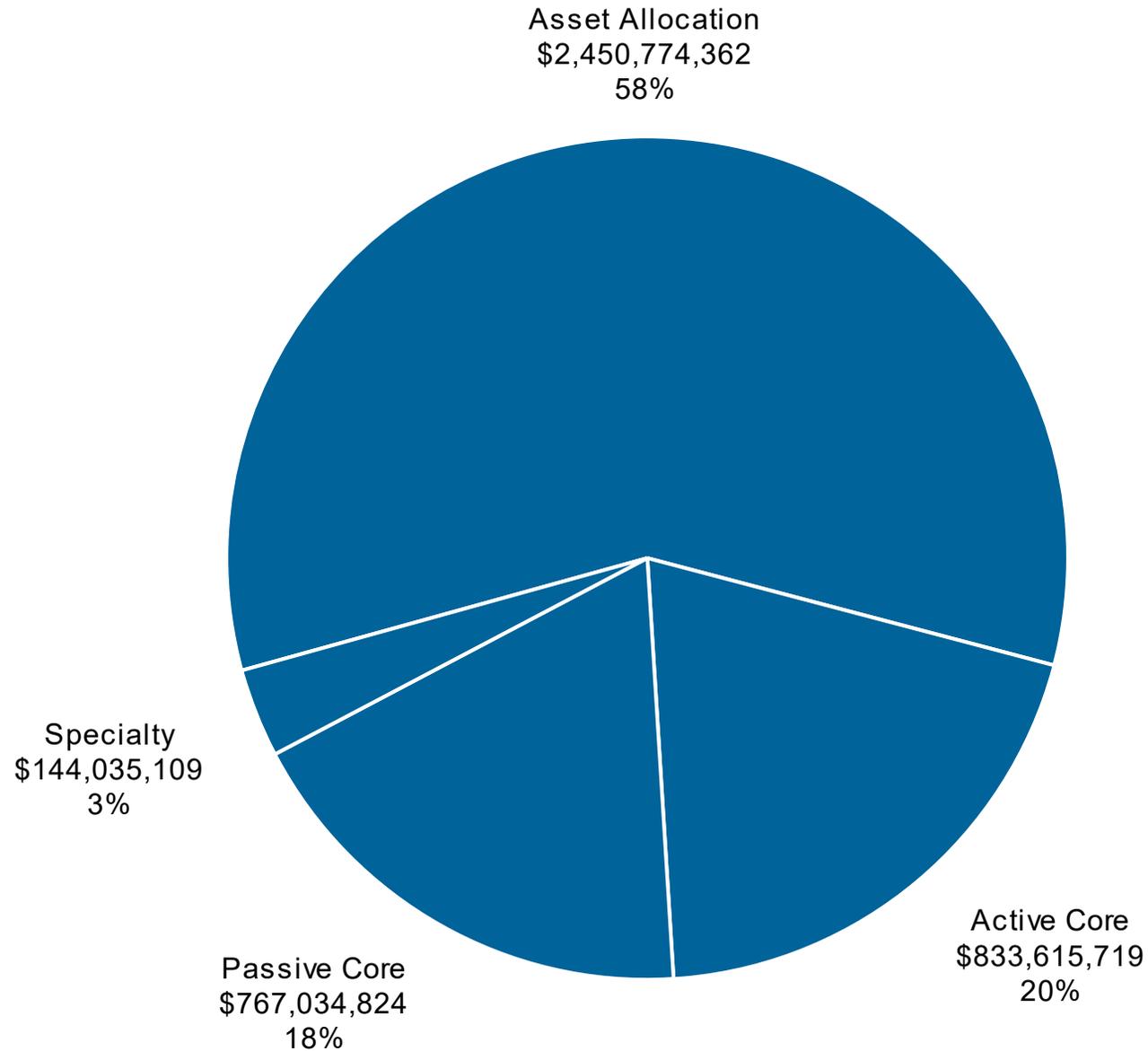
# Deferred Comp Plan: Asset Changes

September 30, 2022



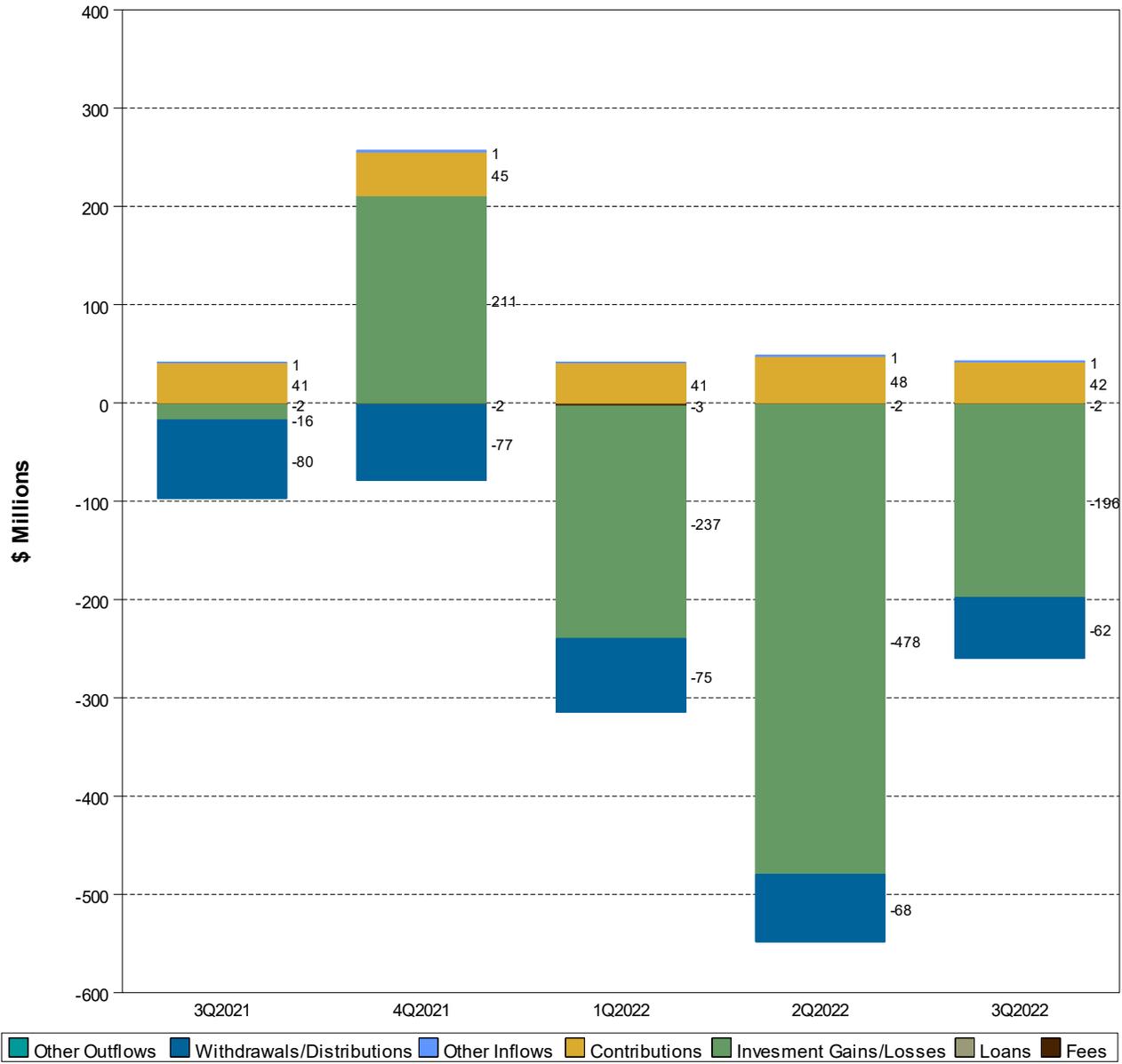
# SBS Fund

September 30, 2022



# SBS Fund: Asset Changes

September 30, 2022



# Individual Account Option Performance: 09/30/22

## Balanced & Target Date Funds

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Asset Allocation</b>										
<b>Alaska Balanced Trust</b> CAI MA Tgt Alloc Cons MFs Passive Target	-4.7 <sup>65</sup>	-13.1 <sup>33</sup>	1.1 <sup>18</sup>	2.6 <sup>19</sup>	3.8 <sup>23</sup>	8.2 <sup>68</sup>		0.2 <sup>7</sup>	0.4 <sup>100</sup>	0.2 <sup>11</sup>
	-4.7 <sup>68</sup>	-13.5 <sup>37</sup>	0.8 <sup>26</sup>	2.5 <sup>20</sup>	3.7 <sup>24</sup>	8.4 <sup>65</sup>				0.2 <sup>13</sup>
<b>Alaska Long-Term Balanced</b> CAI MA Tgt Alloc Mod MFs Passive Target	-5.2 <sup>66</sup>	-15.4 <sup>49</sup>	2.8 <sup>32</sup>	3.9 <sup>32</sup>	5.7 <sup>32</sup>	12.8 <sup>57</sup>		-0.0 <sup>33</sup>	0.5 <sup>100</sup>	0.2 <sup>29</sup>
	-5.2 <sup>67</sup>	-16.0 <sup>59</sup>	2.6 <sup>35</sup>	3.9 <sup>32</sup>	5.8 <sup>31</sup>	13.1 <sup>54</sup>				0.2 <sup>30</sup>
<b>Target 2010 Trust</b> CAI Tgt Date 2010 Custom Index	-4.5 <sup>26</sup>	-12.2 <sup>18</sup>	1.6 <sup>17</sup>	2.9 <sup>14</sup>	4.3 <sup>30</sup>	8.9 <sup>66</sup>		0.0 <sup>13</sup>	0.4 <sup>100</sup>	0.2 <sup>11</sup>
	-4.6 <sup>28</sup>	-12.7 <sup>18</sup>	1.5 <sup>21</sup>	2.9 <sup>14</sup>	4.3 <sup>29</sup>	9.2 <sup>57</sup>				0.2 <sup>12</sup>
<b>Target 2015 Trust</b> CAI Tgt Date 2015 Custom Index	-4.7 <sup>37</sup>	-12.8 <sup>17</sup>	2.2 <sup>6</sup>	3.4 <sup>5</sup>	5.1 <sup>14</sup>	10.1 <sup>64</sup>		0.2 <sup>4</sup>	0.5 <sup>99</sup>	0.2 <sup>5</sup>
	-4.7 <sup>37</sup>	-13.3 <sup>19</sup>	1.9 <sup>9</sup>	3.3 <sup>6</sup>	5.0 <sup>15</sup>	10.4 <sup>52</sup>				0.2 <sup>7</sup>
<b>Target 2020 Trust</b> CAI Tgt Date 2020 Custom Index	-4.9 <sup>48</sup>	-13.8 <sup>23</sup>	2.8 <sup>4</sup>	3.9 <sup>5</sup>	5.8 <sup>11</sup>	11.9 <sup>34</sup>		0.2 <sup>4</sup>	0.5 <sup>99</sup>	0.2 <sup>7</sup>
	-4.9 <sup>47</sup>	-14.4 <sup>24</sup>	2.5 <sup>8</sup>	3.9 <sup>5</sup>	5.8 <sup>11</sup>	12.2 <sup>29</sup>				0.2 <sup>8</sup>
<b>Target 2025 Trust</b> CAI Tgt Date 2025 Custom Index	-5.2 <sup>51</sup>	-15.1 <sup>21</sup>	3.3 <sup>3</sup>	4.3 <sup>2</sup>	6.4 <sup>5</sup>	13.7 <sup>26</sup>		0.1 <sup>2</sup>	0.5 <sup>100</sup>	0.2 <sup>5</sup>
	-5.2 <sup>47</sup>	-15.7 <sup>27</sup>	3.0 <sup>4</sup>	4.3 <sup>3</sup>	6.4 <sup>6</sup>	14.0 <sup>18</sup>				0.2 <sup>6</sup>
<b>Target 2030 Trust</b> CAI Tgt Date 2030 Custom Index	-5.4 <sup>40</sup>	-16.1 <sup>21</sup>	3.7 <sup>3</sup>	4.7 <sup>4</sup>	7.0 <sup>4</sup>	15.3 <sup>30</sup>		0.0 <sup>4</sup>	0.5 <sup>99</sup>	0.2 <sup>6</sup>
	-5.4 <sup>38</sup>	-16.6 <sup>25</sup>	3.5 <sup>5</sup>	4.7 <sup>4</sup>	7.0 <sup>4</sup>	15.6 <sup>26</sup>				0.2 <sup>7</sup>
<b>Target 2035 Trust</b> CAI Tgt Date 2035 Custom Index	-5.6 <sup>31</sup>	-16.9 <sup>15</sup>	4.1 <sup>4</sup>	5.1 <sup>3</sup>	7.5 <sup>5</sup>	16.7 <sup>45</sup>		0.1 <sup>2</sup>	0.5 <sup>100</sup>	0.2 <sup>4</sup>
	-5.5 <sup>28</sup>	-17.5 <sup>17</sup>	3.9 <sup>6</sup>	5.0 <sup>4</sup>	7.5 <sup>5</sup>	17.0 <sup>40</sup>				0.2 <sup>5</sup>
<b>Target 2040 Trust</b> CAI Tgt Date 2040 Custom Index	-5.8 <sup>30</sup>	-17.6 <sup>18</sup>	4.4 <sup>2</sup>	5.3 <sup>3</sup>	7.9 <sup>4</sup>	17.8 <sup>57</sup>		0.1 <sup>2</sup>	0.5 <sup>100</sup>	0.2 <sup>4</sup>
	-5.7 <sup>28</sup>	-18.2 <sup>24</sup>	4.2 <sup>7</sup>	5.3 <sup>3</sup>	7.9 <sup>4</sup>	18.0 <sup>51</sup>				0.2 <sup>4</sup>
<b>Target 2045 Trust</b> CAI Tgt Date 2045 Custom Index	-5.9 <sup>24</sup>	-18.1 <sup>13</sup>	4.7 <sup>4</sup>	5.5 <sup>3</sup>	8.1 <sup>5</sup>	18.6 <sup>70</sup>		0.0 <sup>3</sup>	0.5 <sup>100</sup>	0.2 <sup>3</sup>
	-5.8 <sup>23</sup>	-18.6 <sup>18</sup>	4.5 <sup>5</sup>	5.5 <sup>3</sup>	8.1 <sup>5</sup>	18.9 <sup>58</sup>				0.2 <sup>3</sup>

Returns:  
■ above median  
■ third quartile  
■ fourth quartile

Risk:  
■ below median  
■ second quartile  
■ first quartile



Excess Return Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

Tracking Error:  
■ below median  
■ second quartile  
■ first quartile

Sharpe Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

# Individual Account Option Performance: 09/30/22

## Balanced & Target Date Funds

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Target 2050 Trust</b> CAI Tgt Date 2050	-5.9 <sup>23</sup>	-18.3 <sup>15</sup>	4.6 <sup>5</sup>	5.4 <sup>3</sup>	8.0 <sup>5</sup>	18.7 <sup>78</sup>		0.1 <sup>3</sup>	0.5 <sup>100</sup>	0.2 <sup>3</sup>
Custom Index	-5.8 <sup>22</sup>	-18.9 <sup>22</sup>	4.4 <sup>6</sup>	5.4 <sup>3</sup>	8.0 <sup>5</sup>	18.9 <sup>69</sup>				0.2 <sup>3</sup>
<b>Target 2055 Trust</b> CAI Tgt Date 2055	-5.9 <sup>22</sup>	-18.3 <sup>12</sup>	4.6 <sup>4</sup>	5.4 <sup>3</sup>	8.0 <sup>5</sup>	18.7 <sup>82</sup>		0.0 <sup>3</sup>	0.5 <sup>100</sup>	0.2 <sup>3</sup>
Custom Index	-5.8 <sup>22</sup>	-18.9 <sup>15</sup>	4.4 <sup>5</sup>	5.4 <sup>3</sup>	8.0 <sup>5</sup>	18.9 <sup>75</sup>				0.2 <sup>3</sup>
<b>Target 2060 Trust</b> CAI Tgt Date 2060	-5.9 <sup>27</sup>	-18.3 <sup>14</sup>	4.5 <sup>6</sup>	5.3 <sup>4</sup>		18.7 <sup>81</sup>		-0.2 <sup>9</sup>	0.6 <sup>100</sup>	0.2 <sup>4</sup>
Custom Index	-5.8 <sup>26</sup>	-18.9 <sup>20</sup>	4.4 <sup>8</sup>	5.4 <sup>4</sup>		18.9 <sup>74</sup>				0.2 <sup>4</sup>
<b>Target 2065 Trust</b> CAI Tgt Date 2065	-5.9 <sup>26</sup>	-18.3 <sup>7</sup>								
Custom Index	-5.8 <sup>25</sup>	-18.9 <sup>10</sup>								
<b>JPMorgan SmartRetirementBlend 2015 R6</b> Callan Target Date 2015	-4.2 <sup>10</sup>	-15.4 <sup>53</sup>								
JPMorgan:SR Income MF Idx	-4.8 <sup>47</sup>	-15.9 <sup>69</sup>	-0.5 <sup>98</sup>	1.7 <sup>99</sup>	3.4 <sup>100</sup>	9.6 <sup>77</sup>				0.1 <sup>99</sup>
<b>JPMorgan SmartRetirementBlend 2020 R6</b> Callan Target Date 2020	-4.3 <sup>16</sup>									
JPMorgan:SR 2020 MF Index	-4.8 <sup>41</sup>	-15.9 <sup>60</sup>	-0.3 <sup>90</sup>	1.9 <sup>88</sup>	4.2 <sup>75</sup>	10.2 <sup>82</sup>				0.1 <sup>88</sup>

Returns:  
■ above median  
■ third quartile  
■ fourth quartile

Risk  
■ below median  
■ second quartile  
■ first quartile

Risk Quadrant:  


Excess Return Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

Tracking Error:  
■ below median  
■ second quartile  
■ first quartile

Sharpe Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

# Other Options: 09/30/22

## Passive Strategies

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Index Funds</b>										
<b>SSgA S&amp;P 500 Index Fund (i)</b> Callan S&P 500 Index MFs	-4.9 <sup>8</sup>	-15.5 <sup>1</sup>	8.1 <sup>15</sup>	9.2 <sup>11</sup>	11.4 <sup>8</sup>	20.6 <sup>39</sup>		-1.0 <sup>15</sup>	0.0 <sup>79</sup>	0.4 <sup>10</sup>
S&P 500 Index	-4.9 <sup>9</sup>	-15.5 <sup>1</sup>	8.2 <sup>6</sup>	9.2 <sup>6</sup>	11.4 <sup>5</sup>	20.6 <sup>34</sup>				0.4 <sup>5</sup>
<b>SSgA Russell 3000 Index Fund (i)</b> CAI Mut Fd: Large Cap Broad Style (Net)	-4.4 <sup>38</sup>	-17.5 <sup>51</sup>	7.7 <sup>38</sup>	8.6 <sup>42</sup>	10.9 <sup>35</sup>	21.5 <sup>53</sup>		0.3 <sup>18</sup>	0.1 <sup>100</sup>	0.3 <sup>37</sup>
Russell 3000 Index	-4.5 <sup>38</sup>	-17.6 <sup>52</sup>	7.7 <sup>39</sup>	8.6 <sup>42</sup>	10.9 <sup>35</sup>	21.6 <sup>53</sup>				0.3 <sup>39</sup>
<b>SSgA World Equity ex-US Index Fund (i)</b> CAI MF: Non-U.S. EquityStyle	-10.4 <sup>61</sup>	-25.0 <sup>32</sup>	-1.5 <sup>51</sup>	-0.7 <sup>48</sup>	3.4 <sup>35</sup>	20.2 <sup>70</sup>		0.1 <sup>40</sup>	1.2 <sup>99</sup>	-0.1 <sup>49</sup>
MSCI ACWI x U.S. Index (Net)	-9.9 <sup>48</sup>	-25.2 <sup>35</sup>	-1.5 <sup>52</sup>	-0.8 <sup>49</sup>	3.3 <sup>39</sup>	19.8 <sup>82</sup>				-0.1 <sup>53</sup>
<b>BlackRock Passive US Bd Index Fund (i)</b> Callan Core Bond MFs	-4.8 <sup>55</sup>	-14.6 <sup>33</sup>	-3.3 <sup>81</sup>						0.1 <sup>100</sup>	
BImbg Aggregate	-4.8 <sup>55</sup>	-14.6 <sup>34</sup>	-3.3 <sup>81</sup>	-0.3 <sup>76</sup>	0.5 <sup>89</sup>	5.5 <sup>82</sup>				-0.3 <sup>82</sup>

Returns:  
■ above median  
■ third quartile  
■ fourth quartile

Risk:  
■ below median  
■ second quartile  
■ first quartile



Excess Return Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

Tracking Error:  
■ below median  
■ second quartile  
■ first quartile

Sharpe Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

(i) – Indexed scoring method used. Green: manager & index ranking differ by less than +/- 10 percentiles; Blue: manager and index ranking differ by +/- 20 percentiles; Gold: manager & index ranking differ by more than 20 percentiles.

# Other Options: 09/30/22

## Active Equity, Stable Value, and Money Market

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
<b>Active and Other Funds</b>										
<b>BlackRock Strategic Completion Fd</b> Callan Real Assets MFs Strategic Completion Custom Index	-7.9 <sup>73</sup>	-11.8 <sup>74</sup>	1.6 <sup>88</sup>						0.3 <sup>98</sup>	
<b>Northern Trust ESG Fund</b> Callan Lg Cap Broad MF MSCI USA ESG	-6.3 <sup>85</sup>	-17.0 <sup>47</sup>	7.8 <sup>36</sup>						0.1 <sup>100</sup>	
<b>International Equity Fund</b> CAI Mut Fd: Non-U.S. EquityStyle MSCI ACWI ex US Index	-11.8 <sup>82</sup>	-32.7 <sup>81</sup>	-2.3 <sup>63</sup>	-1.9 <sup>68</sup>	1.2 <sup>79</sup>	22.3 <sup>30</sup>		-0.3 <sup>71</sup>	4.9 <sup>69</sup>	-0.1 <sup>67</sup>
<b>T. Rowe Price Small Cap</b> CAI Mut Fd: Sm Cap Broad Style Russell 2000 Index	-2.3 <sup>42</sup>	-24.1 <sup>52</sup>	4.9 <sup>53</sup>	7.7 <sup>24</sup>	10.6 <sup>16</sup>	25.6 <sup>89</sup>		0.7 <sup>4</sup>	6.5 <sup>90</sup>	0.3 <sup>14</sup>
<b>T. Rowe Price Stable Value</b> Callan Stable Value CT FTSE 3 Mo T-Bill	0.5 <sup>22</sup>	1.9 <sup>12</sup>	2.1 <sup>3</sup>	2.3 <sup>1</sup>	2.3 <sup>1</sup>	0.2 <sup>55</sup>		3.0 <sup>7</sup>	0.3 <sup>15</sup>	7.2 <sup>6</sup>
<b>SSgA Inst Treasury Money Market</b> Callan MoneyMarket Funds FTSE 3 Mo T-Bill	0.5 <sup>35</sup>	0.6 <sup>24</sup>	0.5 <sup>14</sup>	1.0 <sup>11</sup>	0.8 <sup>12</sup>	0.5 <sup>12</sup>		-2.4 <sup>33</sup>	0.1 <sup>95</sup>	-0.3 <sup>10</sup>

Returns:  
■ above median  
■ third quartile  
■ fourth quartile

Risk:  
■ below median  
■ second quartile  
■ first quartile



Excess Return Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

Tracking Error:  
■ below median  
■ second quartile  
■ first quartile

Sharpe Ratio:  
■ above median  
■ third quartile  
■ fourth quartile

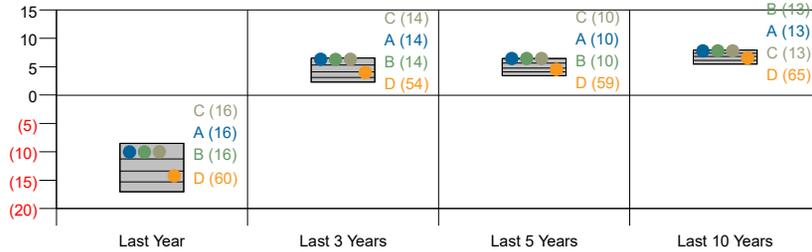
Callan

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**Pension Plans**

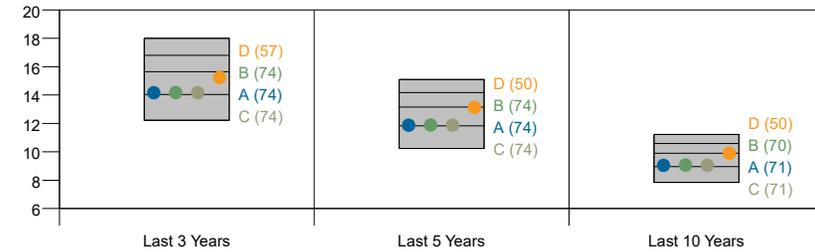
# PERS, TRS, and JRS Performance Dashboard – September 30, 2022

Returns vs Callan Public Fund Sponsor Database



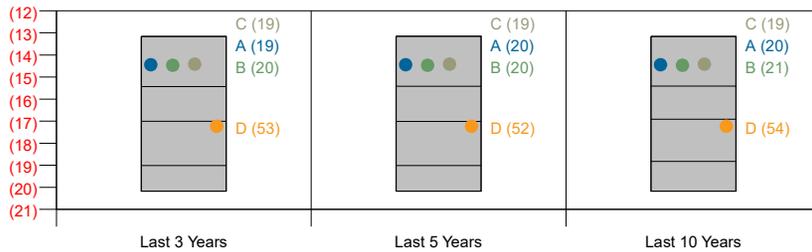
10th Percentile	(8.50)	6.55	6.46	7.95
25th Percentile	(11.25)	5.31	5.66	7.39
Median	(13.39)	4.11	4.78	6.83
75th Percentile	(15.29)	3.13	4.10	6.13
90th Percentile	(17.03)	2.32	3.44	5.50
Member Count	200	199	198	189
Employees' Total Plan	(10.00)	6.31	6.46	7.81
Teachers' Total Plan	(10.02)	6.30	6.45	7.81
Judicial Total Plan	(9.97)	6.33	6.47	7.81
Policy Target	(14.23)	3.99	4.55	6.55

Standard Deviation vs Callan Public Fund Sponsor Database



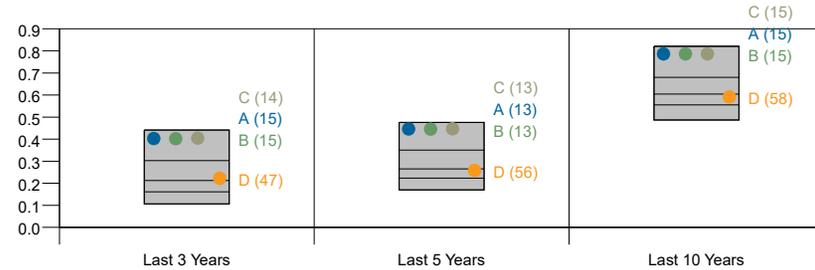
10th Percentile	18.01	15.10	11.23
25th Percentile	16.81	14.19	10.59
Median	15.66	13.17	9.90
75th Percentile	14.05	11.84	8.96
90th Percentile	12.24	10.24	7.86
Member Count	199	198	189
Employees' Total Plan	14.17	11.88	9.06
Teachers' Total Plan	14.19	11.90	9.07
Judicial Total Plan	14.17	11.88	9.05
Policy Target	15.25	13.14	9.91

Maximum Drawdown vs Callan Public Fund Sponsor Database



10th Percentile	(13.15)	(13.15)	(13.15)
25th Percentile	(15.43)	(15.42)	(15.41)
Median	(17.00)	(17.01)	(16.91)
75th Percentile	(19.01)	(19.01)	(18.82)
90th Percentile	(20.17)	(20.17)	(20.17)
Member Count	199	198	189
Employees' Total Plan	(14.44)	(14.44)	(14.44)
Teachers' Total Plan	(14.46)	(14.46)	(14.46)
Judicial Total Plan	(14.41)	(14.41)	(14.41)
Policy Target	(17.23)	(17.23)	(17.23)

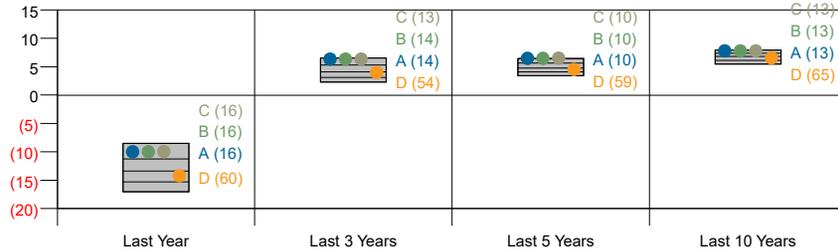
Sharpe Ratio vs Callan Public Fund Sponsor Database



10th Percentile	0.44	0.48	0.82
25th Percentile	0.30	0.35	0.68
Median	0.21	0.27	0.61
75th Percentile	0.16	0.22	0.56
90th Percentile	0.11	0.17	0.49
Member Count	199	198	189
Employees' Total Plan	0.40	0.45	0.79
Teachers' Total Plan	0.40	0.45	0.79
Judicial Total Plan	0.40	0.45	0.79
Policy Target	0.22	0.26	0.59

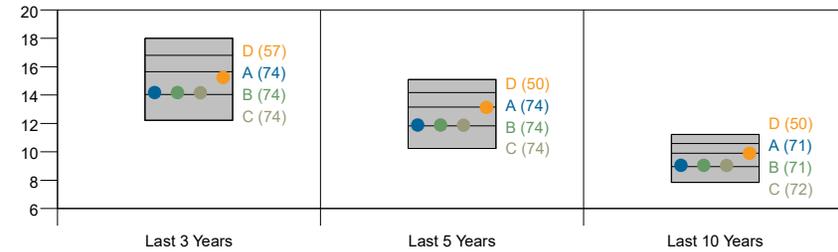
# Health Care Plans Performance Dashboard – September 30, 2022

Returns vs Callan Public Fund Sponsor Database



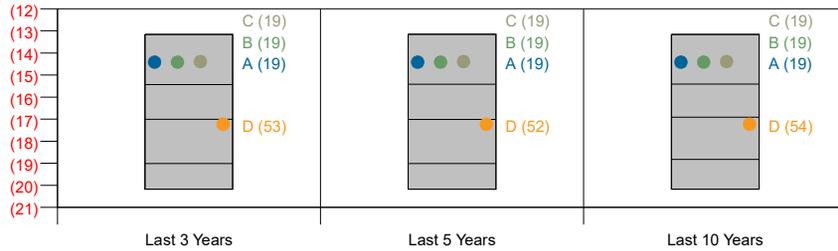
10th Percentile	(8.50)	6.55	6.46	7.95
25th Percentile	(11.25)	5.31	5.66	7.39
Median	(13.39)	4.11	4.78	6.83
75th Percentile	(15.29)	3.13	4.10	6.13
90th Percentile	(17.03)	2.32	3.44	5.50
Member Count	200	199	198	189
PERS Health Plan	A (9.98)	6.36	6.50	7.81
TRS Health Plan	B (9.98)	6.36	6.50	7.81
JRS Health Plan	C (9.96)	6.37	6.52	7.82
Policy Target	D (14.23)	3.99	4.55	6.55

Standard Deviation vs Callan Public Fund Sponsor Database



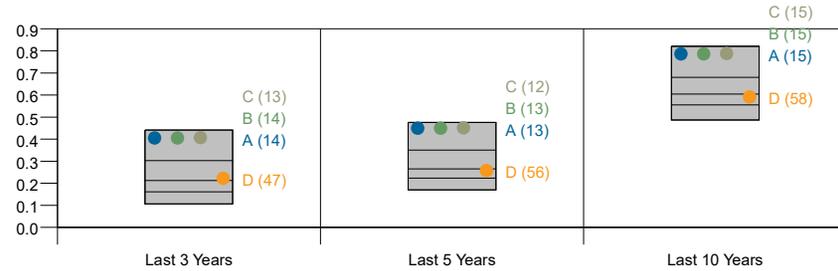
10th Percentile	18.01	15.10	11.23
25th Percentile	16.81	14.19	10.59
Median	15.66	13.17	9.90
75th Percentile	14.05	11.84	8.96
90th Percentile	12.24	10.24	7.86
Member Count	199	198	189
PERS Health Plan	A 14.19	11.90	9.06
TRS Health Plan	B 14.19	11.90	9.06
JRS Health Plan	C 14.17	11.88	9.04
Policy Target	D 15.25	13.14	9.91

Maximum Drawdown vs Callan Public Fund Sponsor Database



10th Percentile	(13.15)	(13.15)	(13.15)
25th Percentile	(15.43)	(15.42)	(15.41)
Median	(17.00)	(17.01)	(16.91)
75th Percentile	(19.01)	(19.01)	(18.82)
90th Percentile	(20.17)	(20.17)	(20.17)
Member Count	199	198	189
PERS Health Plan	A (14.41)	(14.41)	(14.41)
TRS Health Plan	B (14.41)	(14.41)	(14.41)
JRS Health Plan	C (14.39)	(14.39)	(14.39)
Policy Target	D (17.23)	(17.23)	(17.23)

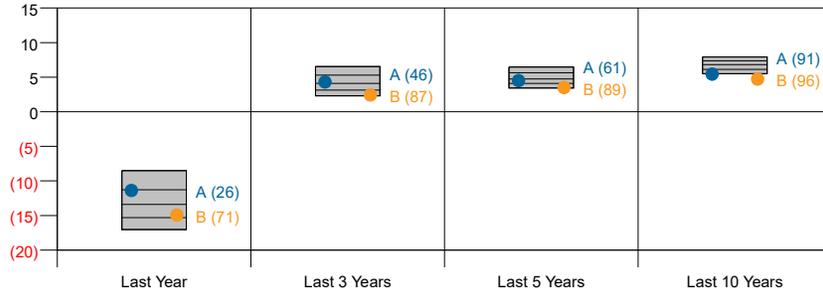
Sharpe Ratio vs Callan Public Fund Sponsor Database



10th Percentile	0.44	0.48	0.82
25th Percentile	0.30	0.35	0.68
Median	0.21	0.27	0.61
75th Percentile	0.16	0.22	0.56
90th Percentile	0.11	0.17	0.49
Member Count	199	198	189
PERS Health Plan	A 0.41	0.45	0.79
TRS Health Plan	B 0.41	0.45	0.79
JRS Health Plan	C 0.41	0.45	0.79
Policy Target	D 0.22	0.26	0.59

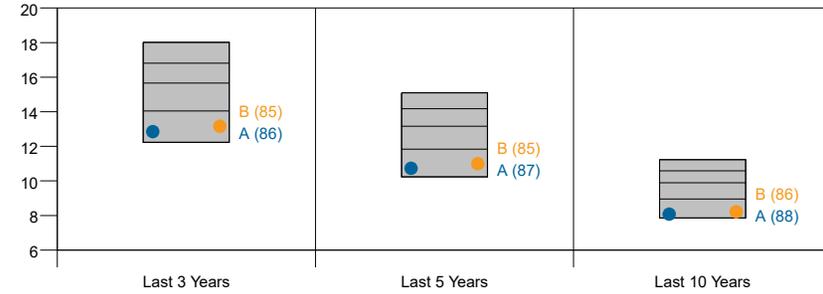
# Military Plan Performance Dashboard – September 30, 2022

Returns vs Callan Public Fund Sponsor Database



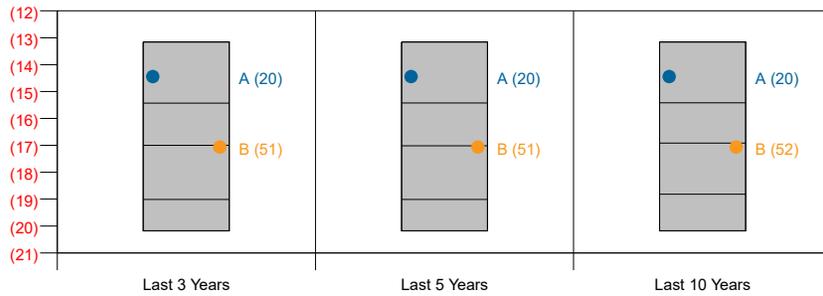
10th Percentile	(8.50)	6.55	6.46	7.95
25th Percentile	(11.25)	5.31	5.66	7.39
Median	(13.39)	4.11	4.78	6.83
75th Percentile	(15.29)	3.13	4.10	6.13
90th Percentile	(17.03)	2.32	3.44	5.50
Member Count	200	199	198	189
Military Total Plan	● A			
Military Policy Target	● B			

Standard Deviation vs Callan Public Fund Sponsor Database



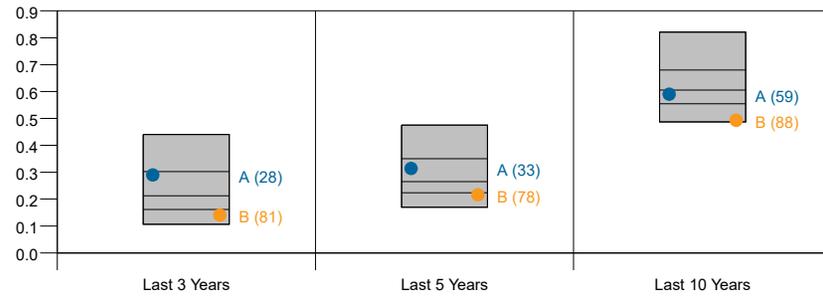
10th Percentile	18.01	15.10	11.23
25th Percentile	16.81	14.19	10.59
Median	15.66	13.17	9.90
75th Percentile	14.05	11.84	8.96
90th Percentile	12.24	10.24	7.86
Member Count	199	198	189
Military Total Plan	● A		
Military Policy Target	● B		

Maximum Drawdown vs Callan Public Fund Sponsor Database



10th Percentile	(13.15)	(13.15)	(13.15)
25th Percentile	(15.43)	(15.42)	(15.41)
Median	(17.00)	(17.01)	(16.91)
75th Percentile	(19.01)	(19.01)	(18.82)
90th Percentile	(20.17)	(20.17)	(20.17)
Member Count	199	198	189
Military Total Plan	● A		
Military Policy Target	● B		

Sharpe Ratio vs Callan Public Fund Sponsor Database

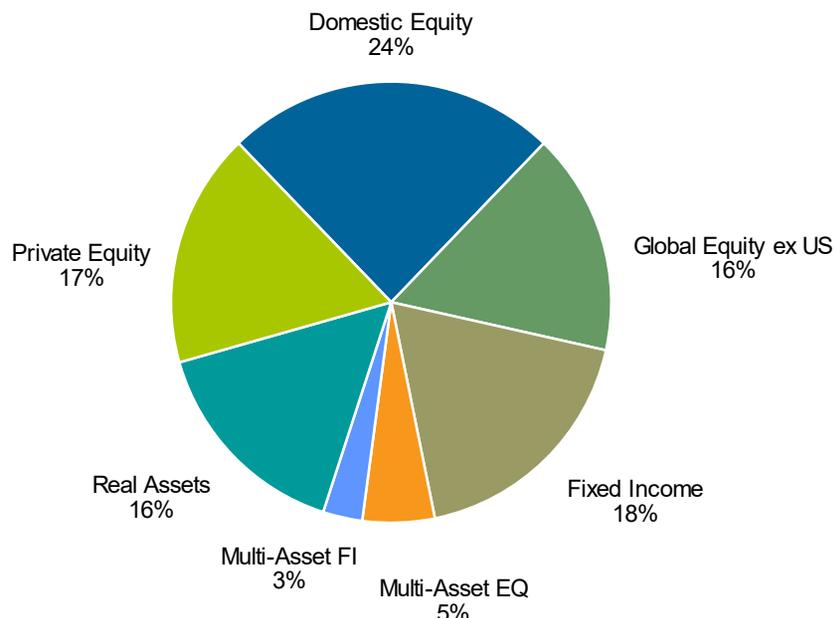


10th Percentile	0.44	0.48	0.82
25th Percentile	0.30	0.35	0.68
Median	0.21	0.27	0.61
75th Percentile	0.16	0.22	0.56
90th Percentile	0.11	0.17	0.49
Member Count	199	198	189
Military Total Plan	● A		
Military Policy Target	● B		

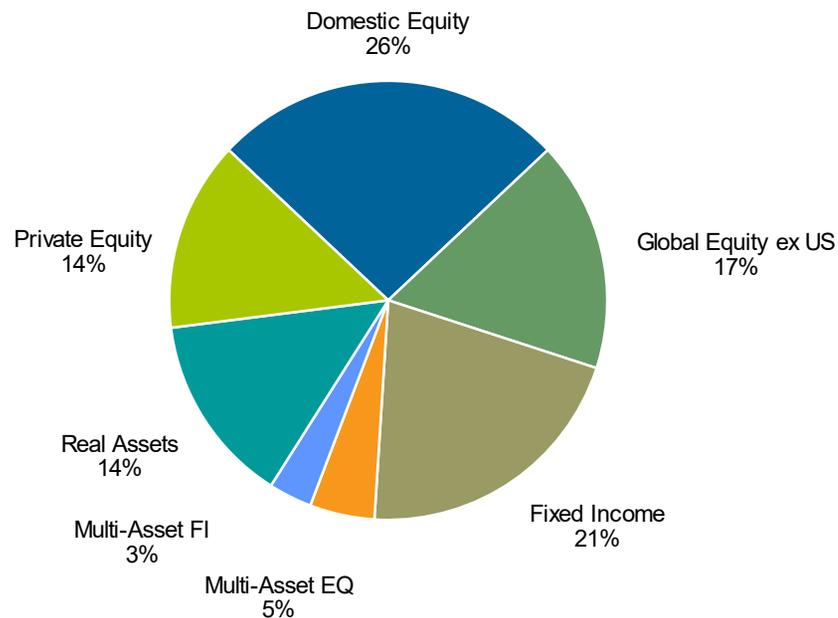
# Asset Allocation – Public Employees’ Retirement System

Quarter Ending September 30, 2022

**Actual Asset Allocation**



**Target Asset Allocation**



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	2,492,511	24.4%	26.0%	(1.6%)	(166,584)
Global Equity ex US	1,669,345	16.3%	17.0%	(0.7%)	(69,294)
Fixed Income	1,874,483	18.3%	21.0%	(2.7%)	(273,247)
Multi-Asset EQ	543,292	5.3%	4.8%	0.5%	52,382
Multi-Asset FI	293,348	2.9%	3.2%	(0.3%)	(33,925)
Real Assets	1,593,671	15.6%	14.0%	1.6%	161,851
Private Equity	1,760,637	17.2%	14.0%	3.2%	328,817
<b>Total</b>	<b>10,227,286</b>	<b>100.0%</b>	<b>100.0%</b>		

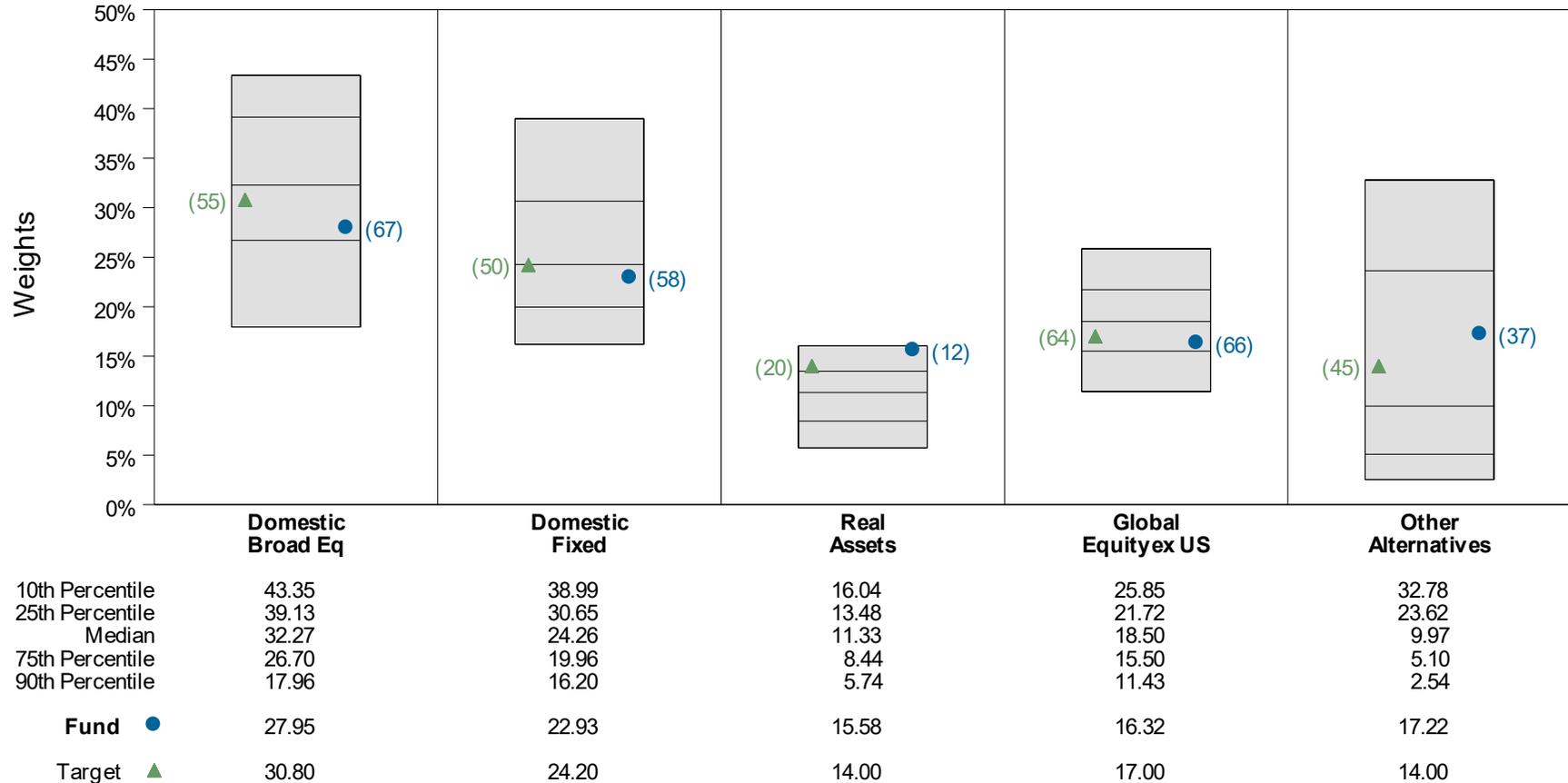
**PERS is used as illustrative throughout the presentation.**

**The other plans exhibit modest variations from strategic target allocations.**

# Asset Allocation vs. Public Funds (PERS)

Callan Public Fund Database

## Asset Class Weights vs Callan Public Fund Sponsor Database



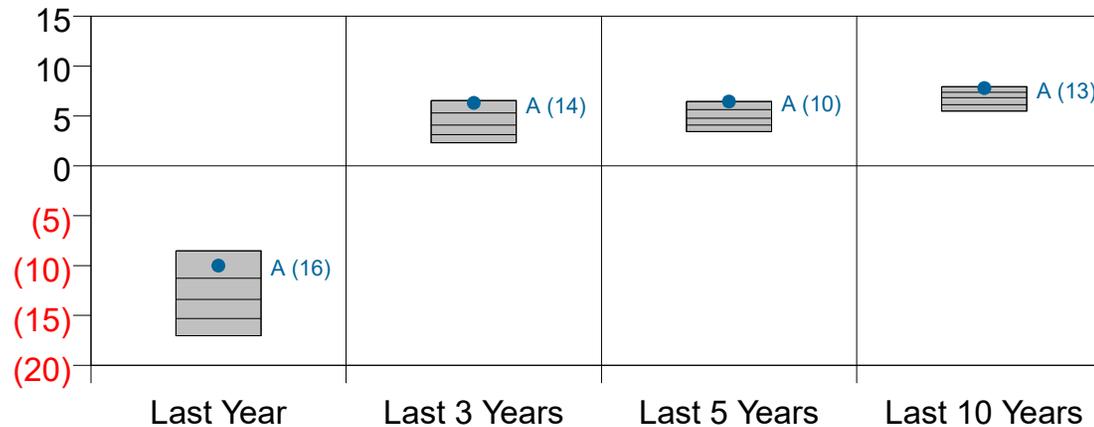
- Asset class allocations are in line with targets after the asset allocation update and associated rebalancing.
- Weightings to real assets and alternatives are relatively high in comparison to other public funds.

Notes: Real Assets includes Private Real Estate, REITs, Farmland, Timber, Energy, and Infrastructure. Other Alternatives represents private equity.

# Total Fund Return vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Returns  
for Periods Ended September 30, 2022  
Group: Callan Public Fund Sponsor Database



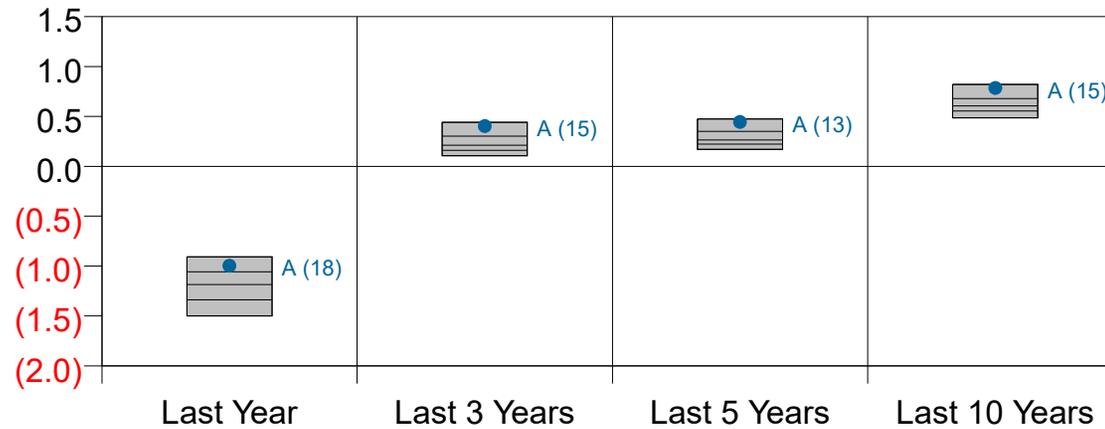
	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(8.50)	6.55	6.46	7.95
25th Percentile	(11.25)	5.31	5.66	7.39
Median	(13.39)	4.11	4.78	6.83
75th Percentile	(15.29)	3.13	4.10	6.13
90th Percentile	(17.03)	2.32	3.44	5.50
Member Count	200	199	198	189
PERS - Total Fund ● A	(10.00)	6.31	6.46	7.81

- Despite the recent change to the asset allocation, longer-term performance reflects ARMB's prior orientation toward capital growth as opposed to income generation.
- Performance was above the Public Funds median for the one-, three-, five-, and ten-year periods.

# Total Fund Sharpe Ratio Rankings vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Sharpe Ratio  
for Periods Ended September 30, 2022  
Group: Callan Public Fund Sponsor Database



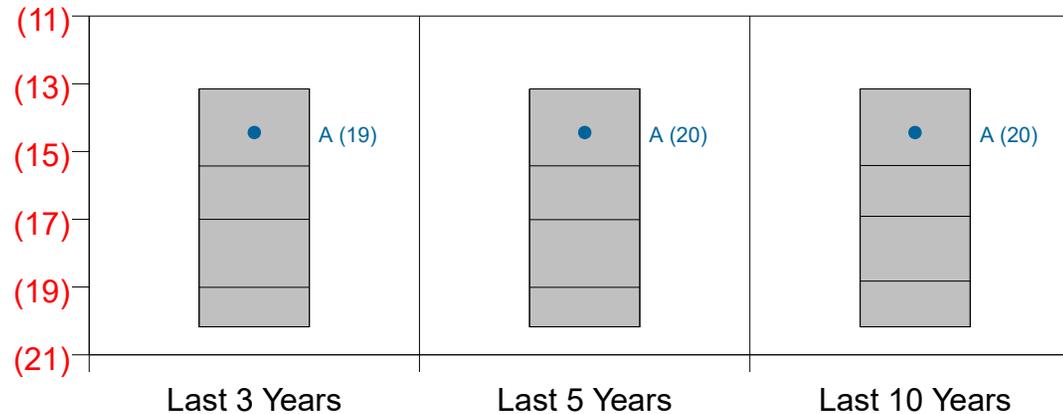
	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.91)	0.44	0.48	0.82
25th Percentile	(1.06)	0.30	0.35	0.68
Median	(1.18)	0.21	0.27	0.61
75th Percentile	(1.34)	0.16	0.22	0.56
90th Percentile	(1.50)	0.11	0.17	0.49
Member Count	200	199	198	189
PERS - Total Fund	(0.99)	0.40	0.45	0.79

- “Sharpe ratio” is a risk-adjusted measure of excess return above the risk-free rate.
- ARMB’s risk-adjusted return (Sharpe ratio) was above the Public Funds median for the one-, three-, five-, and ten-year periods.

# Total Maximum Drawdown Rankings vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Maximum Drawdown  
for Periods Ended September 30, 2022  
Group: Callan Public Fund Sponsor Database



	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(13.15)	(13.15)	(13.15)
25th Percentile	(15.43)	(15.42)	(15.41)
Median	(17.00)	(17.01)	(16.91)
75th Percentile	(19.01)	(19.01)	(18.82)
90th Percentile	(20.17)	(20.17)	(20.17)

Member Count	199	198	189
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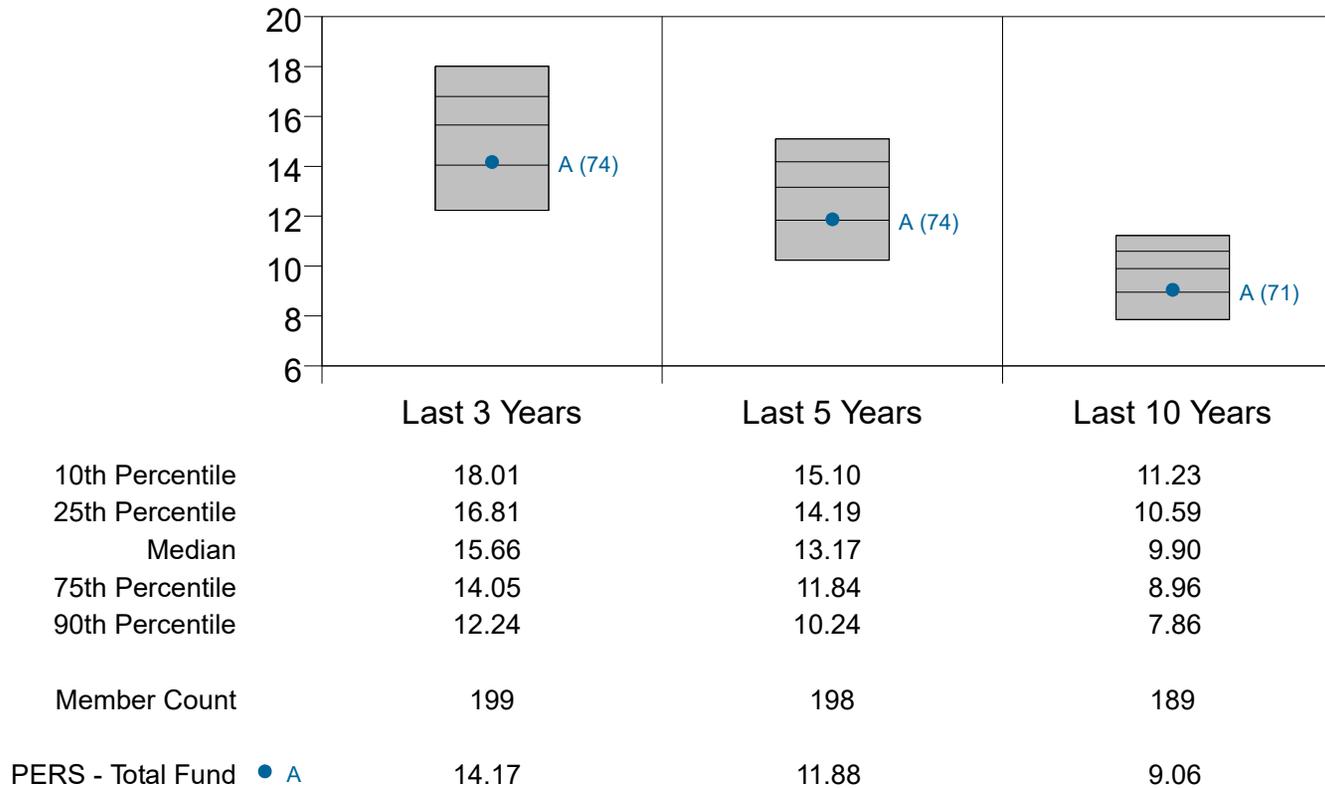
PERS - Total Fund ● A	(14.44)	(14.44)	(14.44)
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- “Maximum drawdown” is a measure of the largest loss from peak to trough in a given period.
- Lower rankings reflect larger drawdowns (i.e. bigger losses). ARMB’s drawdown rankings for all periods have reflected better than average drawdowns (i.e. lower losses) and have improved over time.
- The drawdown experienced in the first quarter of 2020 is the largest of the last 10 years.

# Standard Deviation Ranking vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Standard Deviation  
for Periods Ended September 30, 2022  
Group: Callan Public Fund Sponsor Database



- “Standard deviation” measures variability of returns. It is one measurement of investment risk.
- Less standard deviation results in lower rankings. A lower ranking of standard deviation suggests lower variability.
- ARMB’s portfolio diversification has resulted in volatility that is lower than median compared to peers.

# PERS Performance Attribution – 3<sup>rd</sup> Quarter 2022 & Trailing Year

## Relative Attribution Effects for Quarter ended September 30, 2022

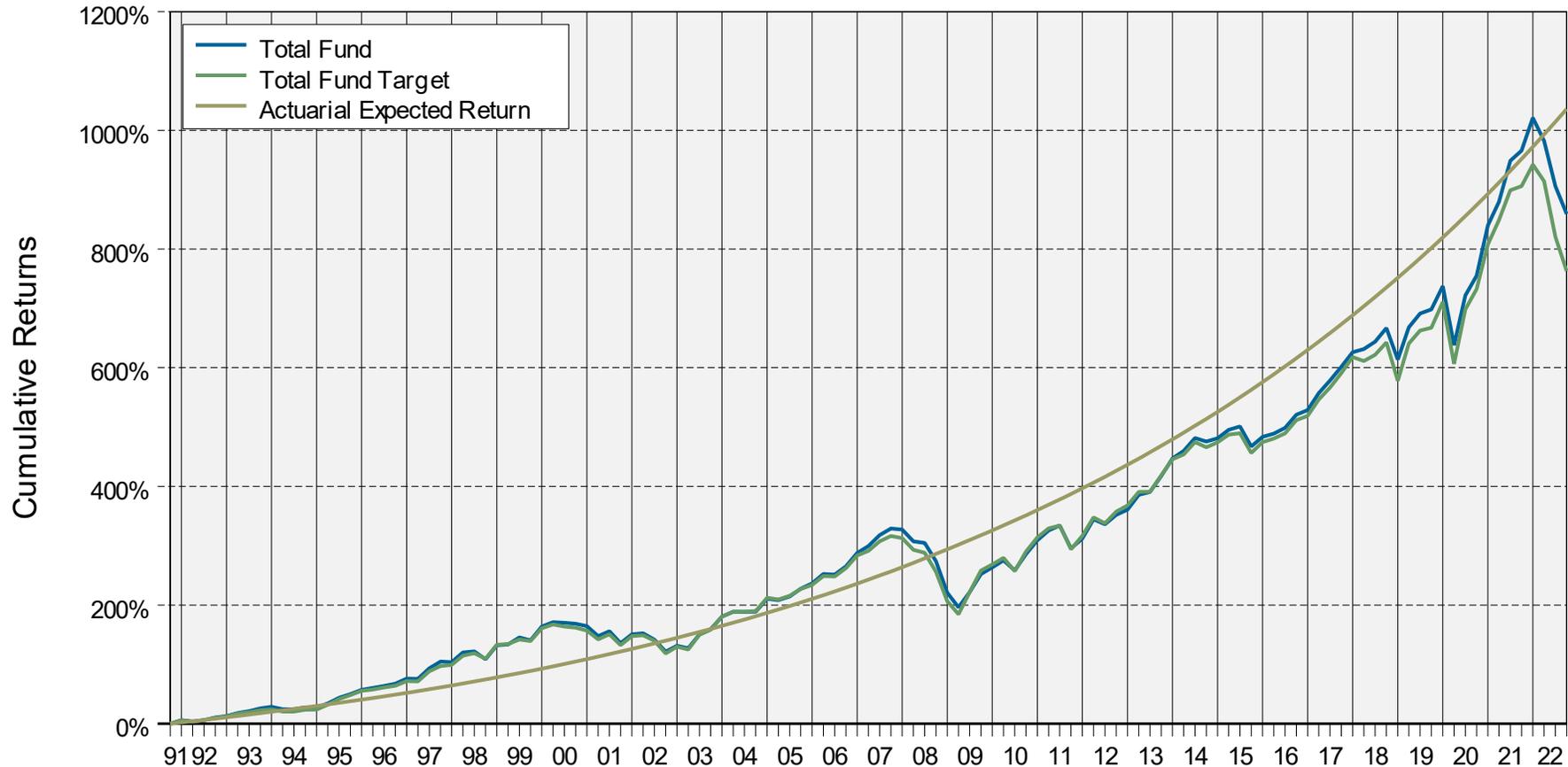
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	24%	26%	(4.88%)	(4.46%)	(0.10%)	(0.03%)	(0.13%)
Fixed-Income	20%	21%	(3.91%)	(4.49%)	0.12%	(0.01%)	0.11%
Multi-Asset	7%	8%	(3.14%)	(5.88%)	0.19%	(0.00%)	0.19%
Real Assets	15%	14%	0.51%	1.25%	(0.11%)	0.04%	(0.06%)
Global Equity ex US	17%	17%	(9.58%)	(9.69%)	0.02%	0.01%	0.03%
Private Equity	17%	14%	(5.37%)	(15.94%)	1.82%	(0.32%)	1.50%
<b>Total</b>			<b>(4.65%)</b>	<b>(6.28%)</b>	<b>+ 1.94%</b>	<b>+ (0.31%)</b>	<b>1.63%</b>

## One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	27%	27%	(15.87%)	(17.63%)	0.48%	(0.00%)	0.48%
Fixed-Income	21%	21%	(11.20%)	(13.88%)	0.56%	(0.02%)	0.54%
Multi-Asset	6%	6%	(13.63%)	(18.42%)	0.32%	0.00%	0.32%
Real Assets	13%	14%	12.84%	13.37%	(0.05%)	(0.20%)	(0.25%)
Global Equity ex US	17%	18%	(26.91%)	(25.72%)	(0.24%)	0.05%	(0.19%)
Private Equity	15%	14%	6.04%	(17.98%)	3.53%	(0.22%)	3.31%
<b>Total</b>			<b>(10.00%)</b>	<b>(14.23%)</b>	<b>+ 4.62%</b>	<b>+ (0.39%)</b>	<b>4.23%</b>

# PERS Long-Term Total Fund Performance as of 09/30/2022

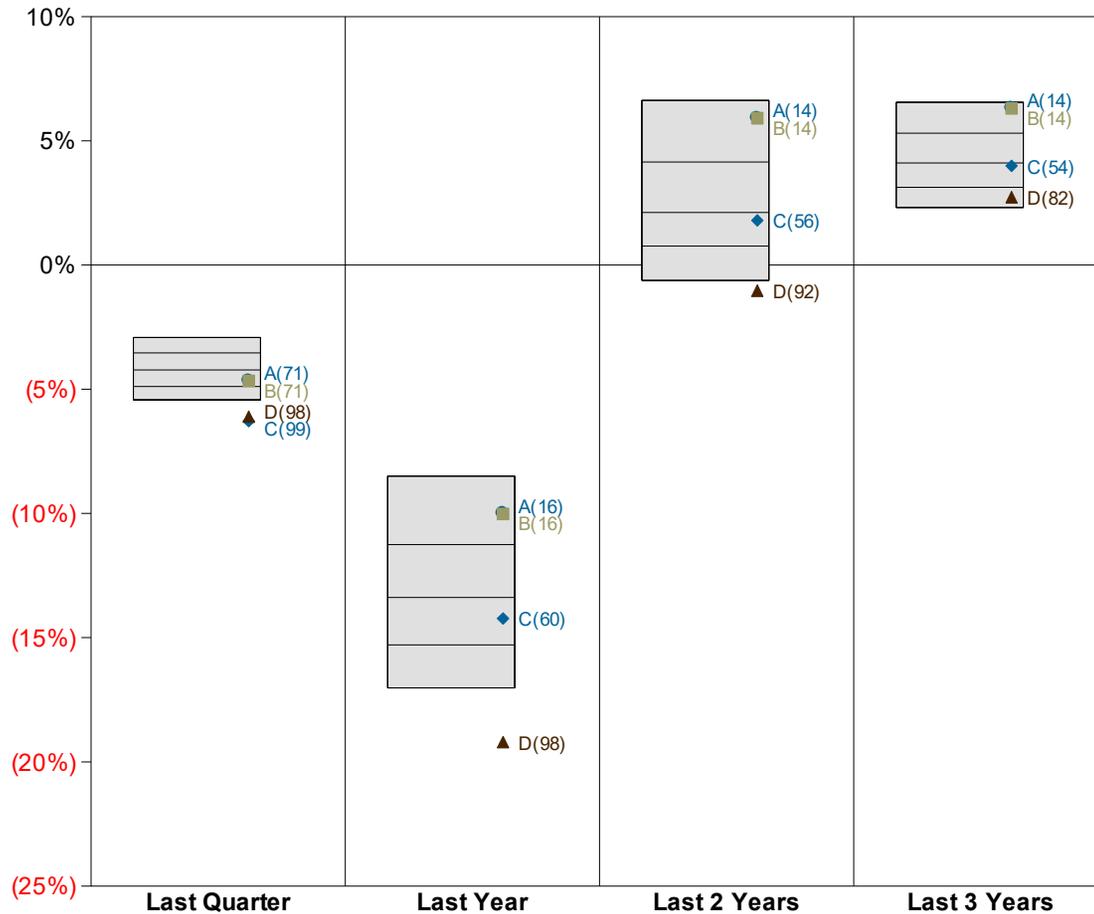
## Cumulative Returns Actual vs Target



- Each Fund has two targets: the asset allocation policy return and the actuarial return.
- Total Fund returns continue to closely track the strategic allocation target.
- Market correction setbacks in 3Q15, 4Q18, 1Q20, and 2022 have hindered the Total Fund's progress toward closing the gap versus the actuarial return following the Global Financial Crisis of 2008/2009.

# Annualized Total Fund Returns as of 09/30/22

## Callan Public Fund Database



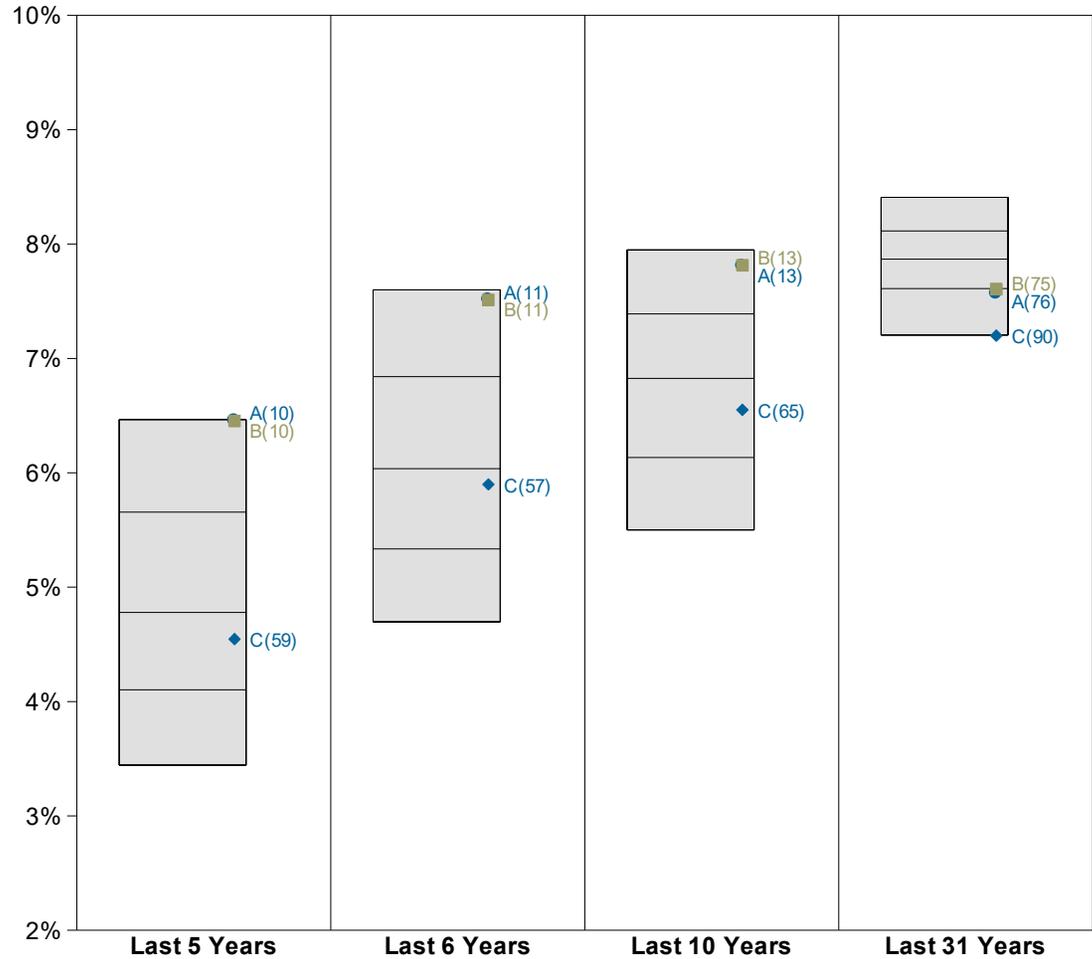
- PERS and TRS have outperformed their target for the last quarter, year, two-year and three-year periods.

	Last Quarter	Last Year	Last 2 Years	Last 3 Years
10th Percentile	(2.91)	(8.50)	6.63	6.55
25th Percentile	(3.54)	(11.25)	4.14	5.31
Median	(4.23)	(13.39)	2.12	4.11
75th Percentile	(4.89)	(15.29)	0.76	3.13
90th Percentile	(5.43)	(17.03)	(0.62)	2.32
PERS Total Plan ● A	(4.65)	(10.00)	5.91	6.31
TRS Total Plan ■ B	(4.66)	(10.02)	5.91	6.30
Target Index ◆ C	(6.28)	(14.23)	1.80	3.99
Public Market Proxy ▲ D	(6.10)	(19.21)	(1.03)	2.73

The Public Market Proxy consists of 45% Russell 3000 Index, 30% MSCI ACWI ex US IMI (Net), and 25% Bloomberg Aggregate Index.

# Longer-Term Total Fund Returns as of 09/30/22

## Callan Public Fund Database

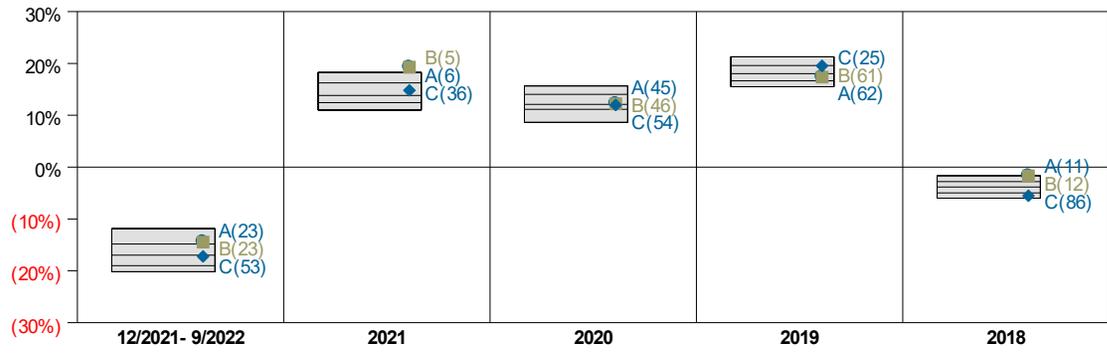


10th Percentile		6.46	7.60	7.95	8.41
25th Percentile		5.66	6.84	7.39	8.11
Median		4.78	6.04	6.83	7.87
75th Percentile		4.10	5.33	6.13	7.61
90th Percentile		3.44	4.70	5.50	7.20
PERS Total Plan	● A	6.46	7.51	7.81	7.57
TRS Total Plan	■ B	6.45	7.51	7.81	7.61
Target Index	◆ C	4.55	5.90	6.55	7.20

- Five-, six-, and ten-year performance is above target and median.
- 31 year return for PERS beat the target by 37 basis points.

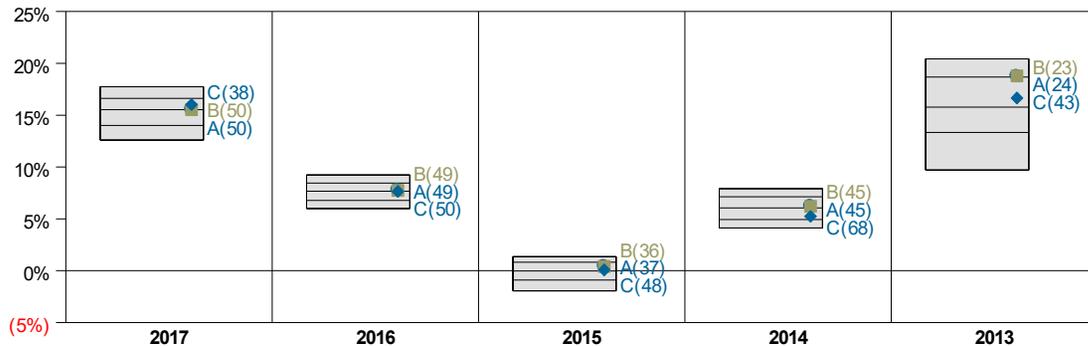
# Calendar Period Total Fund Performance

## Callan Public Fund Database



	12/2021- 9/2022	2021	2020	2019	2018
10th Percentile	(11.86)	18.25	15.65	21.28	(1.65)
25th Percentile	(14.83)	16.25	14.04	19.59	(2.80)
Median	(16.96)	13.84	12.10	18.03	(3.83)
75th Percentile	(19.01)	12.45	11.14	16.66	(4.96)
90th Percentile	(20.19)	11.01	8.63	15.52	(5.98)

PERS Total Plan	● A	(14.44)	19.27	12.23	17.34	(1.70)
TRS Total Plan	■ B	(14.46)	19.28	12.21	17.36	(1.70)
Target Index	◆ C	(17.23)	14.81	11.99	19.54	(5.53)



	2017	2016	2015	2014	2013
10th Percentile	17.73	9.23	1.36	7.92	20.43
25th Percentile	16.63	8.46	0.82	7.13	18.69
Median	15.54	7.67	(0.02)	6.05	15.77
75th Percentile	14.01	6.79	(0.90)	4.94	13.33
90th Percentile	12.60	6.00	(1.96)	4.13	9.71

PERS Total Plan	● A	15.52	7.74	0.40	6.22	18.74
TRS Total Plan	■ B	15.54	7.74	0.41	6.22	18.79
Target Index	◆ C	16.03	7.64	0.08	5.24	16.66

- PERS and TRS rank at or above median in nine of the ten periods shown.
- Peer group range of returns during 2016, 2015, and 2014 were very tight.
- Wide range of peer group returns during calendar 2013 due to varying fixed-income allocations within the Public Fund universe.
- In the three periods with negative Public Fund returns (calendar year to date 2022, 2018, and 2015), ARMB's results ranked well above median in the Public Fund universe.

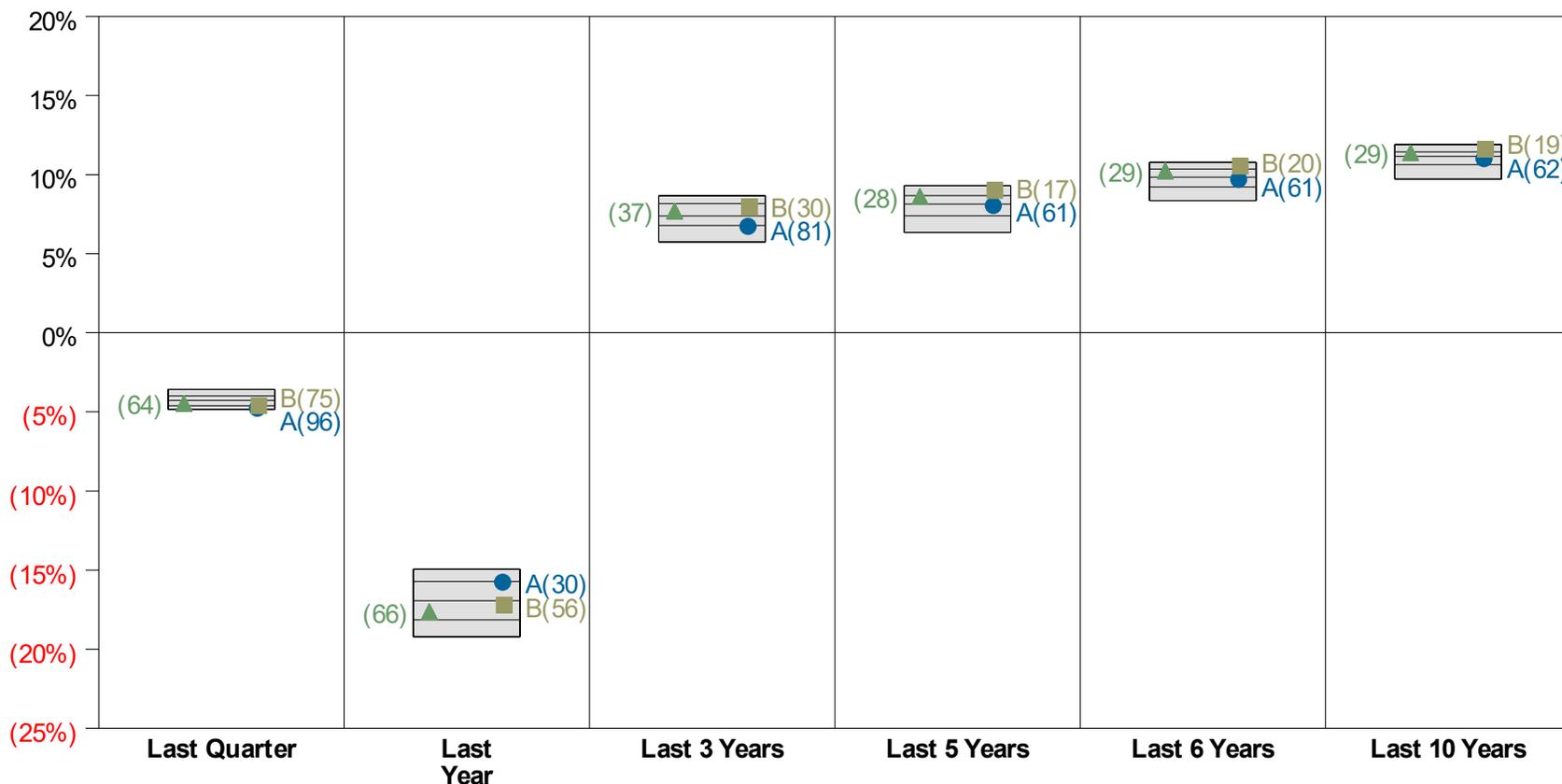
Callan

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**Pension Plan – Asset Class Performance**

# Total Domestic Equity through 09/30/22

## Performance vs Public Fund - Domestic Equity (Gross)



10th Percentile	(3.57)	(14.95)	8.66	9.30	10.78	11.90
25th Percentile	(4.00)	(15.72)	8.17	8.67	10.34	11.43
Median	(4.27)	(16.94)	7.38	8.13	9.83	11.15
75th Percentile	(4.61)	(18.15)	6.78	7.39	9.22	10.63
90th Percentile	(4.84)	(19.23)	5.74	6.34	8.35	9.71
Domestic Equity Pool ● A	(4.88)	(15.87)	6.62	7.93	9.59	10.90
Russell 1000 Index ■ B	(4.61)	(17.22)	7.95	9.00	10.53	11.60
Russell 3000 Index ▲	(4.46)	(17.63)	7.70	8.62	10.24	11.39

## Domestic Equity Component Returns

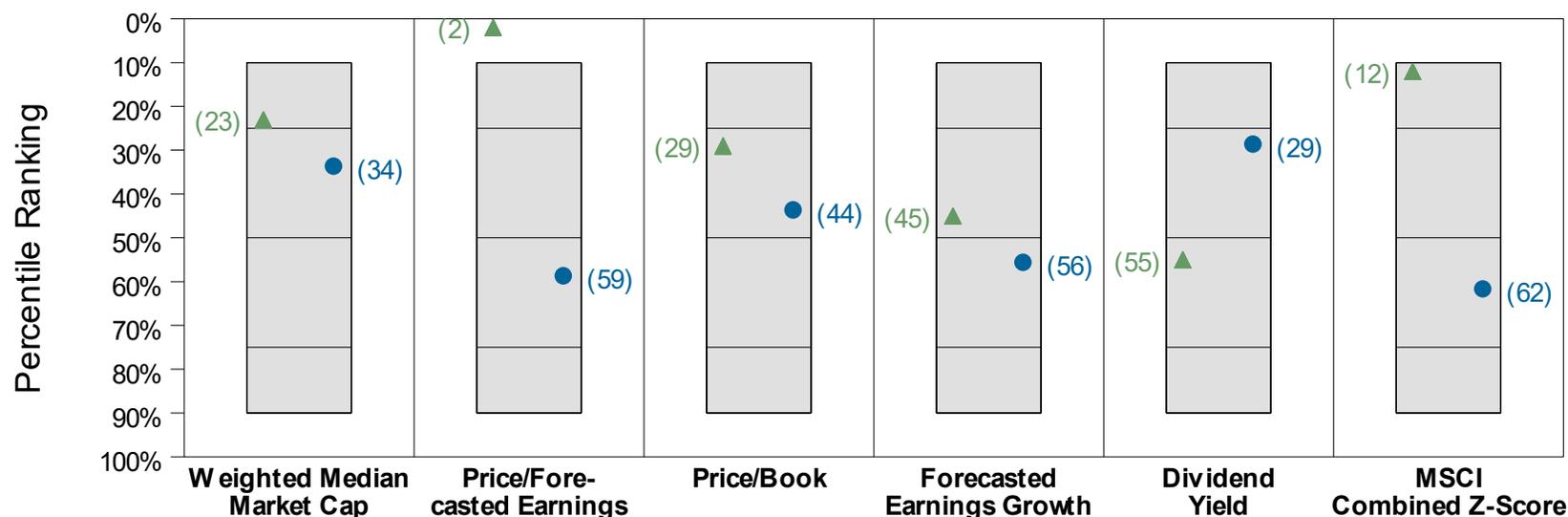
Returns for Periods Ended September 30, 2022

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Dom Equity Pool	(4.88%)	(15.87%)	6.62%	7.93%	10.90%
Russell 3000 Index	(4.46%)	(17.63%)	7.70%	8.62%	11.39%
Large Cap Managers	(4.86%)	(15.62%)	6.69%	8.26%	11.20%
Russell 1000 Index	(4.61%)	(17.22%)	7.95%	9.00%	11.60%
Small Cap Managers	(5.23%)	(18.93%)	5.26%	5.33%	9.91%
Russell 2000 Index	(2.19%)	(23.50%)	4.29%	3.55%	8.55%

- The large cap composite trailed its benchmark (the Russell 1000 Index) for the last quarter, trailing 3-, 5-, and 10-year periods and outperformed over the last year.
- The small cap composite has outperformed its benchmark (the Russell 2000 Index) over all periods shown with the exception of last quarter.

# Domestic Equity Portfolio Characteristics

## Portfolio Characteristics Percentile Rankings Rankings Against Public Fund - Domestic Equity as of September 30, 2022



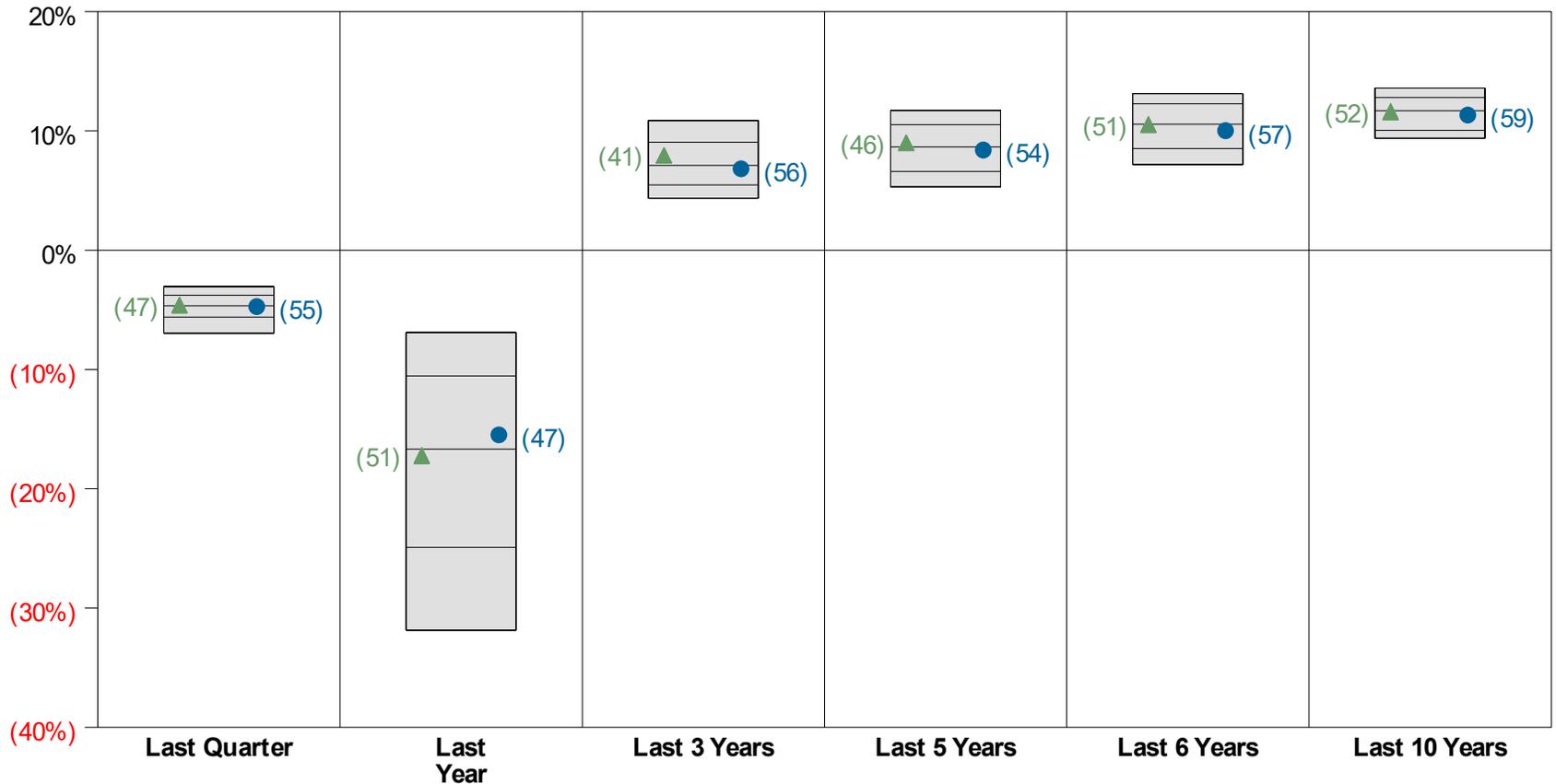
10th Percentile	129.05	15.02	3.25	14.40	1.96	0.05
25th Percentile	83.21	14.99	3.15	13.86	1.96	(0.02)
Median	61.84	14.32	2.75	13.36	1.83	(0.08)
75th Percentile	45.01	13.78	2.54	12.51	1.72	(0.10)
90th Percentile	31.14	12.16	2.25	12.41	1.65	(0.25)

<b>Domestic Equity Pool</b>	●	72.31	14.16	2.79	13.04	1.92	(0.08)
Russell 3000 Index	▲	104.80	15.52	3.04	13.54	1.81	0.00

- ARMB's overall domestic equity portfolio's market capitalization is smaller than 34% of public funds (first column).
- Overall, ARMB's domestic equity portfolio tilts decidedly "value" versus peers (last column on right).
  - "MSCI Combined Z-Score" measures Growth and Value characteristics of individual stocks within managers' portfolios.
  - A low Z-Score rank (i.e.– the dot appears towards the top of the floating bar) indicates a Growth bias.
  - A high Z-Score rank (i.e. – the dot appears towards the bottom of the floating bar) indicates a Value bias.

# Large Cap Domestic Equity through 09/30/22

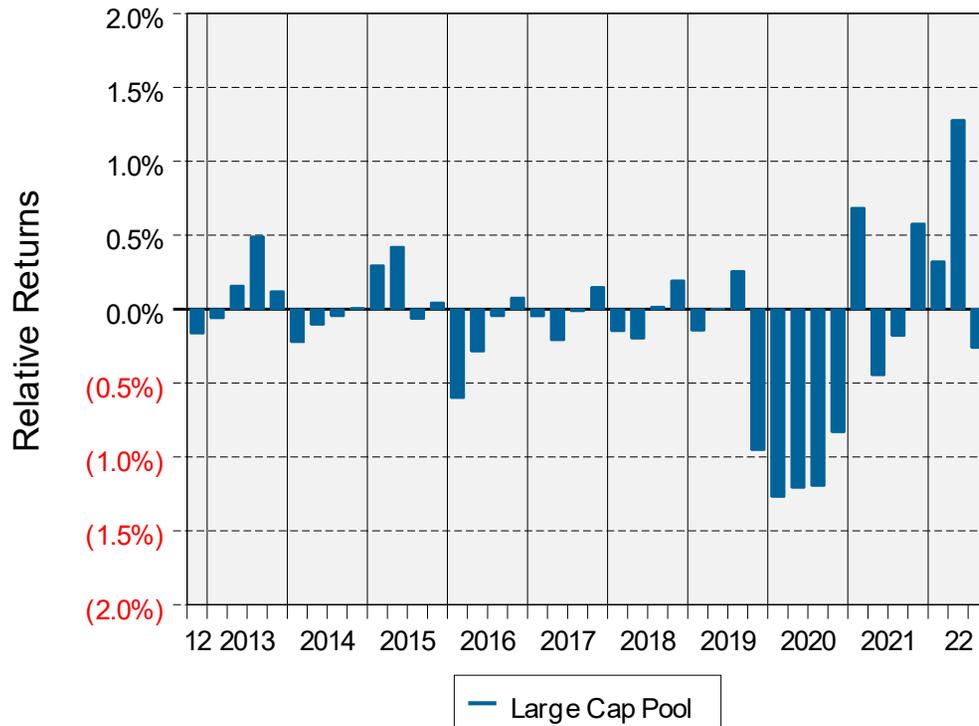
## Performance vs Callan Large Capitalization (Gross)



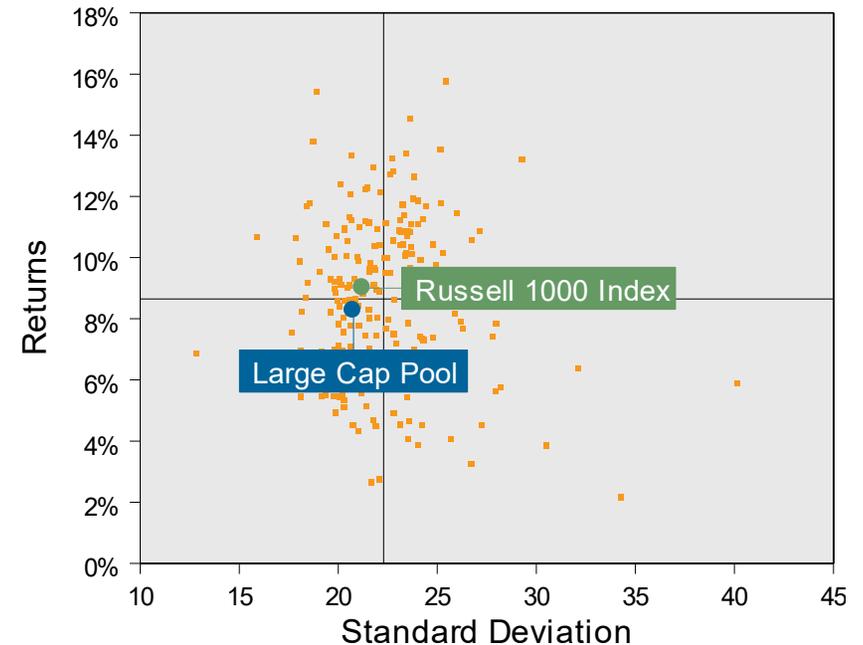
10th Percentile	(3.07)	(6.91)	10.85	11.72	13.11	13.57
25th Percentile	(3.78)	(10.54)	9.05	10.52	12.27	12.80
Median	(4.65)	(16.68)	7.10	8.65	10.55	11.68
75th Percentile	(5.61)	(24.91)	5.48	6.61	8.51	10.04
90th Percentile	(6.97)	(31.86)	4.34	5.31	7.18	9.37
<b>Large Cap Pool</b> ●	(4.86)	(15.62)	6.69	8.26	9.88	11.20
Russell 1000 Index ▲	(4.61)	(17.22)	7.95	9.00	10.53	11.60

# Large Cap Domestic Equity as of 09/30/22

## Relative Return vs Russell 1000 Index



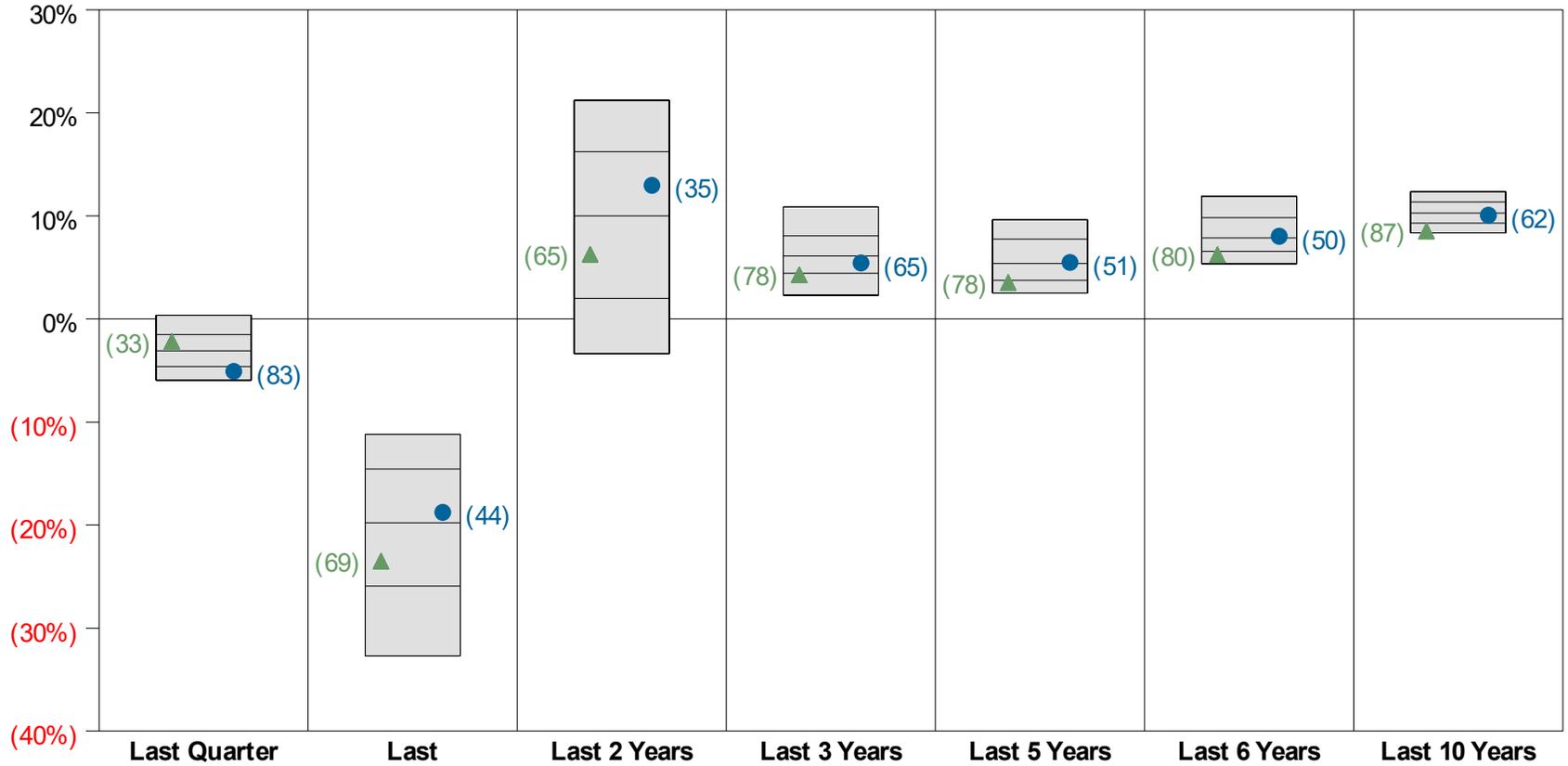
## Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return



- Large Cap Domestic Equity returns underperformed the Russell 1000 index by 25bps in the third quarter of 2022.
- Long-term performance exhibits market-like returns with similar risk.
- Underperformance vs. the Russell 1000 Index in 4Q19 through 4Q20 was driven by Scientific Beta, which trailed the broad benchmark by between 2% and 4% in each of those quarters.
- Passive implementation also detracted as the S&P 900 Index trailed the Russell 1000 Index by 1.1% in 2Q20, 0.8% in 3Q20, and 0.9% in 4Q20.

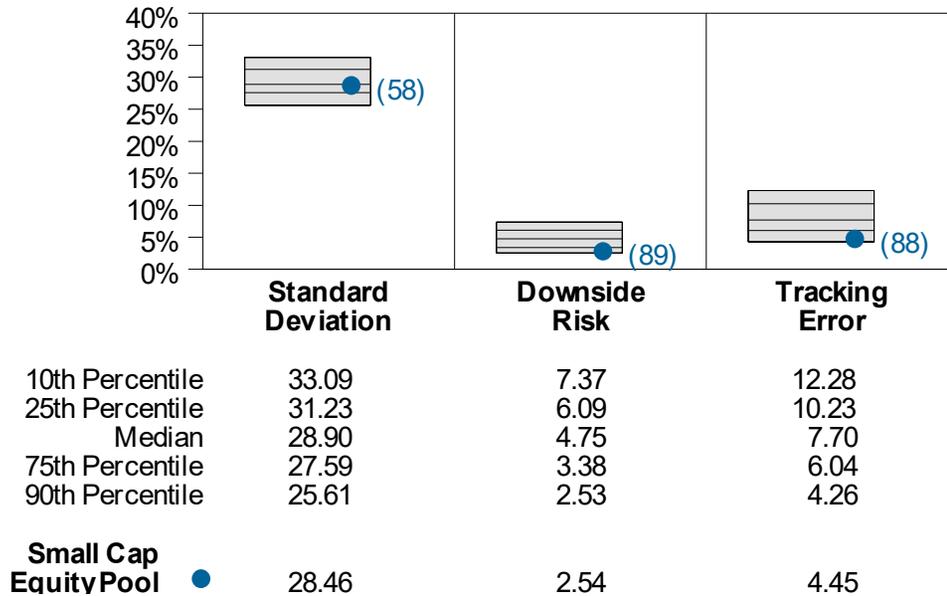
# Small Cap Domestic Equity through 09/30/22

## Performance vs Callan Small Capitalization (Gross)

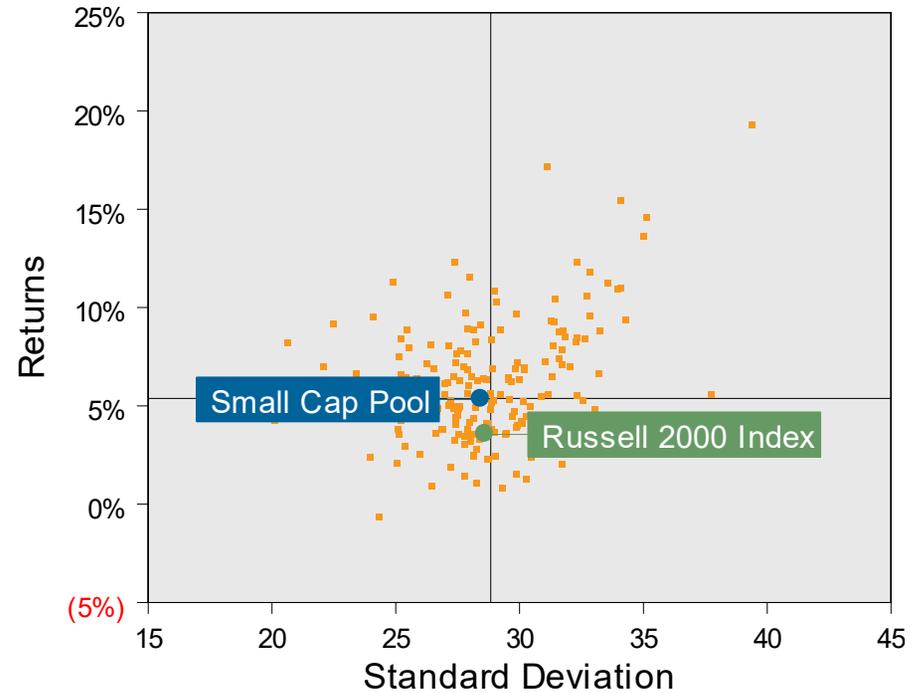


10th Percentile	0.36	(11.20)	21.22	10.88	9.64	11.92	12.35
25th Percentile	(1.51)	(14.57)	16.23	8.07	7.75	9.83	11.34
Median	(3.10)	(19.78)	10.00	6.10	5.38	7.88	10.28
75th Percentile	(4.62)	(25.92)	2.00	4.44	3.73	6.56	9.29
90th Percentile	(5.95)	(32.71)	(3.37)	2.29	2.50	5.35	8.36
<b>Small Cap Pool</b>	<b>● (5.23)</b>	<b>(18.93)</b>	12.81	5.26	5.33	7.86	9.91
Russell 2000 Index	▲ (2.19)	(23.50)	6.29	4.29	3.55	6.24	8.55

# Small Cap Domestic Equity through 09/30/22



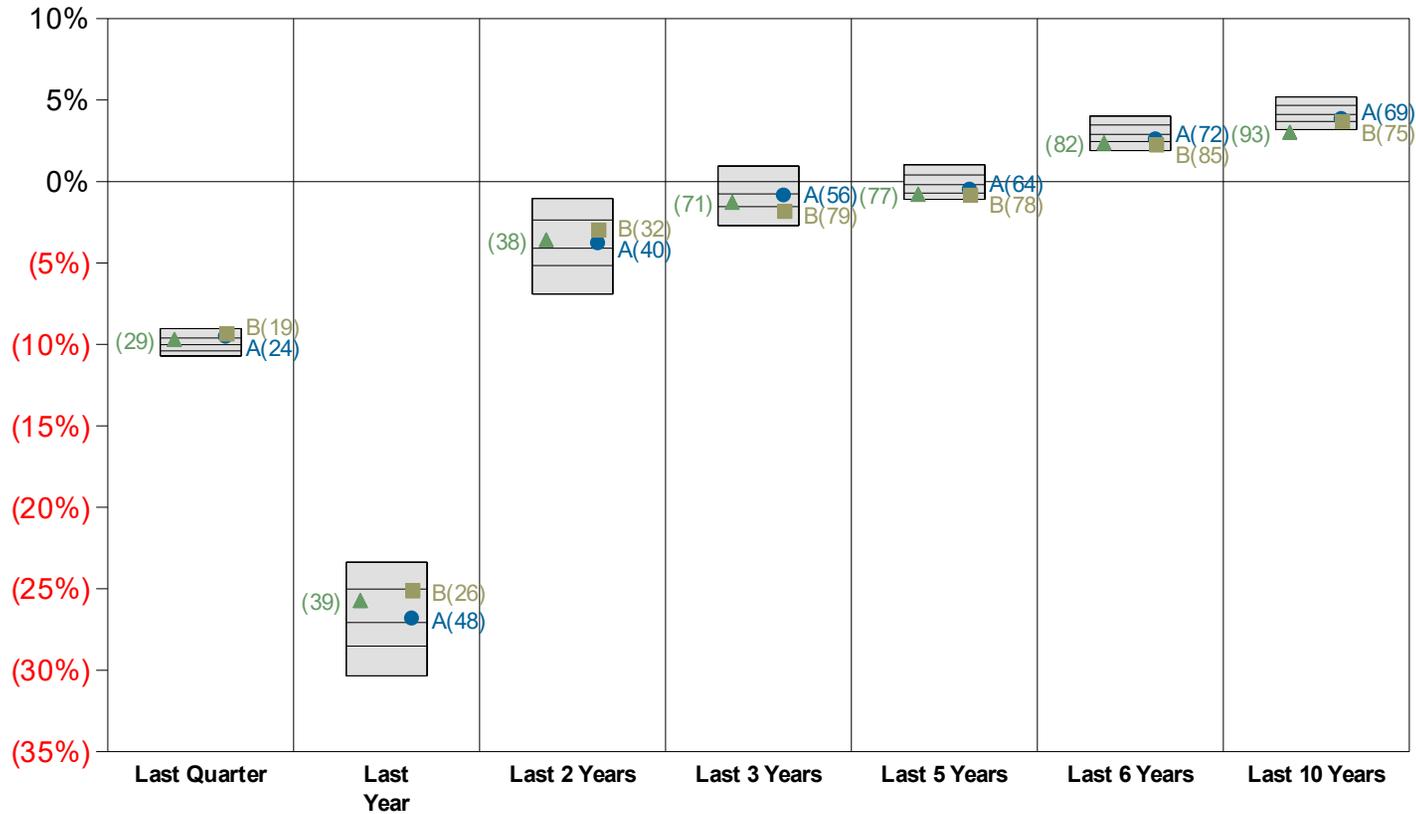
Callan Small Capitalization (Gross)  
Annualized Five Year Risk vs Return



- The five-year risk statistics of standard deviation, downside risk, and tracking error compare favorably versus the peer group of small cap managers.

# Global Equity ex-US through 09/30/22

## Performance vs Public Fund - International Equity (Gross)



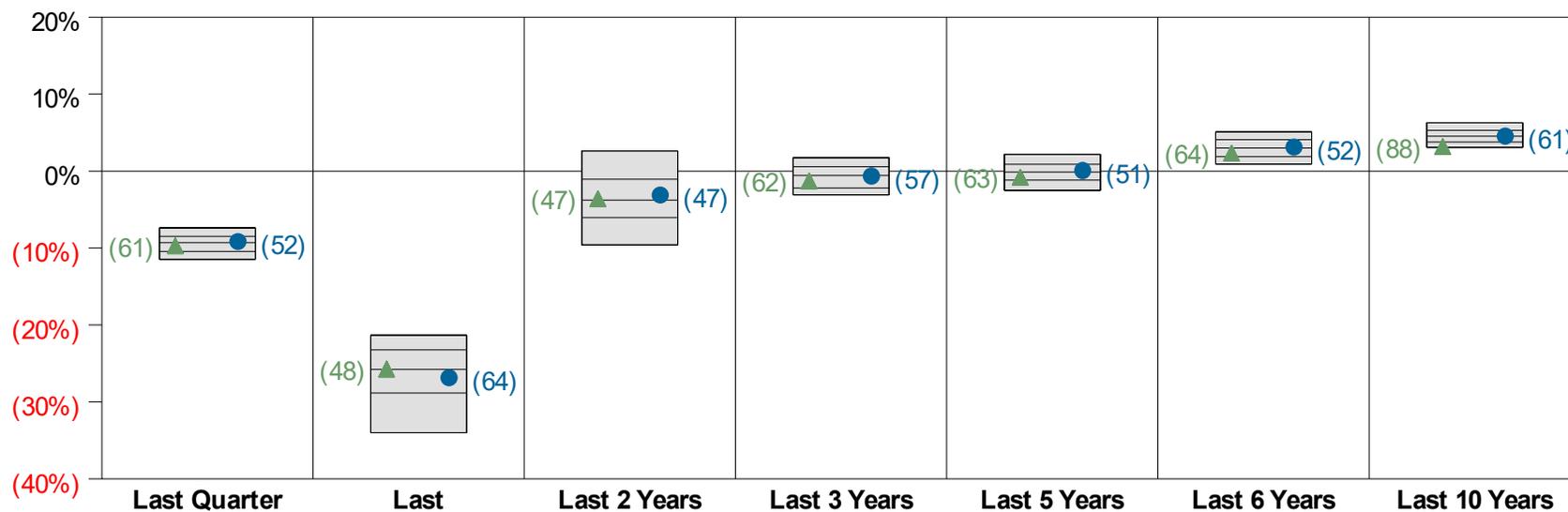
10th Percentile	(9.03)	(23.37)	(1.05)	0.95	1.03	4.02	5.20
25th Percentile	(9.61)	(25.02)	(2.37)	(0.00)	0.41	3.48	4.67
Median	(10.02)	(27.08)	(4.09)	(0.76)	(0.19)	2.89	4.11
75th Percentile	(10.40)	(28.52)	(5.16)	(1.55)	(0.72)	2.46	3.69
90th Percentile	(10.71)	(30.36)	(6.91)	(2.71)	(1.09)	1.90	3.19

Global Equity ex-US MSCI	● A	(9.58)	(26.88)	(3.84)	(0.90)	(0.54)	2.53	3.78
EAFE Index	■ B	(9.36)	(25.13)	(2.98)	(1.83)	(0.84)	2.24	3.67
Int'l Equity Target	▲	(9.69)	(25.72)	(3.58)	(1.27)	(0.78)	2.37	3.03

The Int'l Equity Target currently consists of MSCI ACWI ex U.S. IMI.

# International Equity ex Emerging Markets through 09/30/22

## Performance vs Callan Non-US Equity (Gross)



10th Percentile	(7.39)	(21.33)	2.61	1.75	2.17	5.10	6.27
25th Percentile	(8.48)	(23.23)	(1.05)	0.57	0.87	4.08	5.29
Median	(9.30)	(25.79)	(3.77)	(0.57)	(0.13)	2.99	4.54
75th Percentile	(10.43)	(28.84)	(6.03)	(2.19)	(1.18)	1.88	3.78
90th Percentile	(11.47)	(34.00)	(9.60)	(3.09)	(2.51)	0.90	3.07

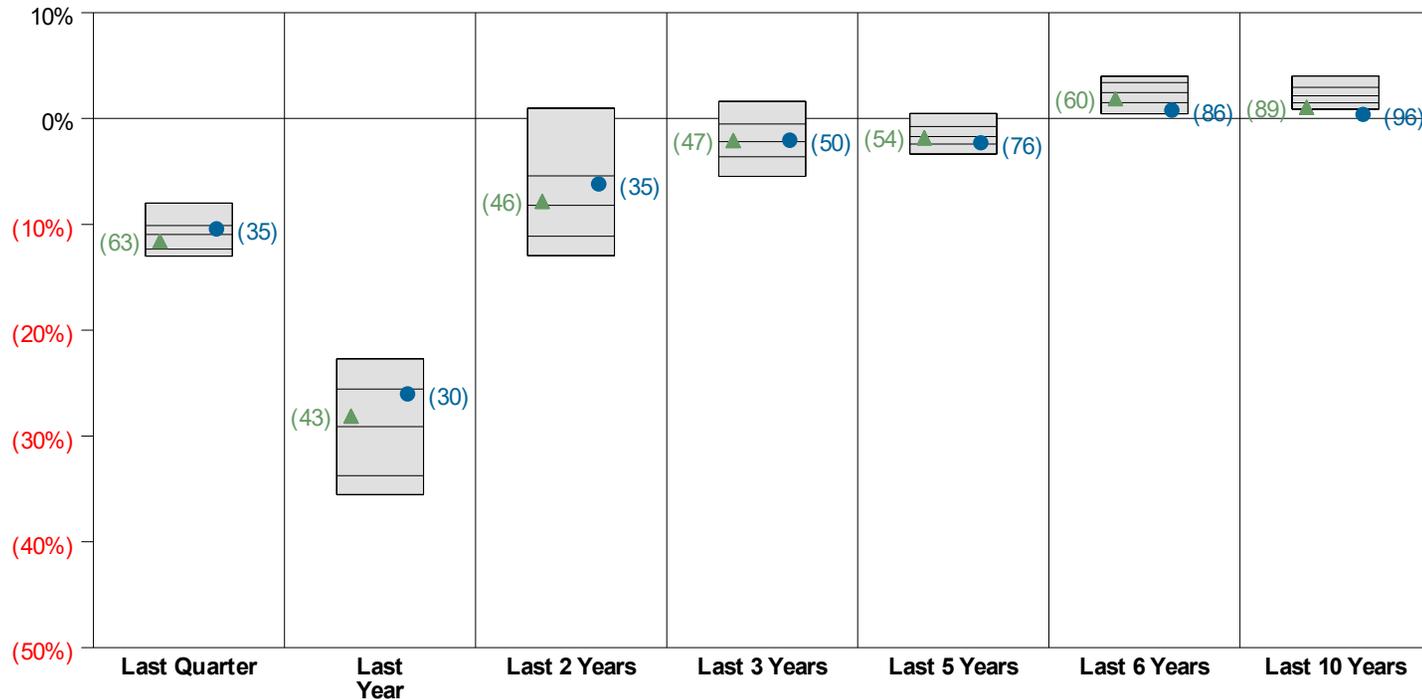
<b>Int'l EquityPool (ex Emerging. Mkt)</b>	●	(9.37)	(27.09)	(3.33)	(0.88)	(0.15)	2.91	4.32
MSCI ACWI xUS IMI	▲	(9.69)	(25.72)	(3.58)	(1.27)	(0.78)	2.35	3.19

## International Equity ex Emerging Markets through 09/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Int'l Equity Pool (ex Emerging Market)</b>	<b>(9.37%)</b>	<b>(27.09%)</b>	<b>(0.88%)</b>	<b>(0.15%)</b>	<b>4.32%</b>
Arrowstreet ACWI ex -US	(7.50%)	(23.29%)	6.02%	4.11%	-
Baillie Gifford ACWI ex US	(8.67%)	(38.85%)	(1.74%)	(0.13%)	-
Brandes Investment	(11.21%)	(23.04%)	(1.49%)	(1.33%)	4.09%
Capital Guardian	(9.61%)	(35.90%)	(2.42%)	0.72%	5.09%
L&G Sci Beta Dev ex US	(9.80%)	(22.54%)	(1.24%)	-	-
SSgA World ex US IMI	(9.22%)	(24.87%)	(1.16%)	-	-
MSCI EAFE Index	(9.36%)	(25.13%)	(1.83%)	(0.84%)	3.67%
MSCI ACWI ex-US IMI Index	(9.69%)	(25.72%)	(1.27%)	(0.78%)	3.19%

# Emerging Markets through 09/30/22

## Performance vs Callan Emerging Broad (Gross)



	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(8.00)	(22.72)	0.97	1.62	0.49	3.99	4.01
25th Percentile	(10.12)	(25.57)	(5.43)	(0.52)	(0.75)	3.39	2.94
Median	(10.95)	(29.12)	(8.21)	(2.18)	(1.71)	2.44	2.15
75th Percentile	(12.33)	(33.76)	(11.12)	(3.62)	(2.42)	1.50	1.48
90th Percentile	(13.00)	(35.55)	(12.95)	(5.46)	(3.35)	0.46	0.88

<b>Emerging Markets Pool</b> ●	(10.56)	(26.17)	(6.33)	(2.18)	(2.43)	0.64	0.24
MSCI EM ▲	(11.57)	(28.11)	(7.82)	(2.07)	(1.80)	1.88	1.05

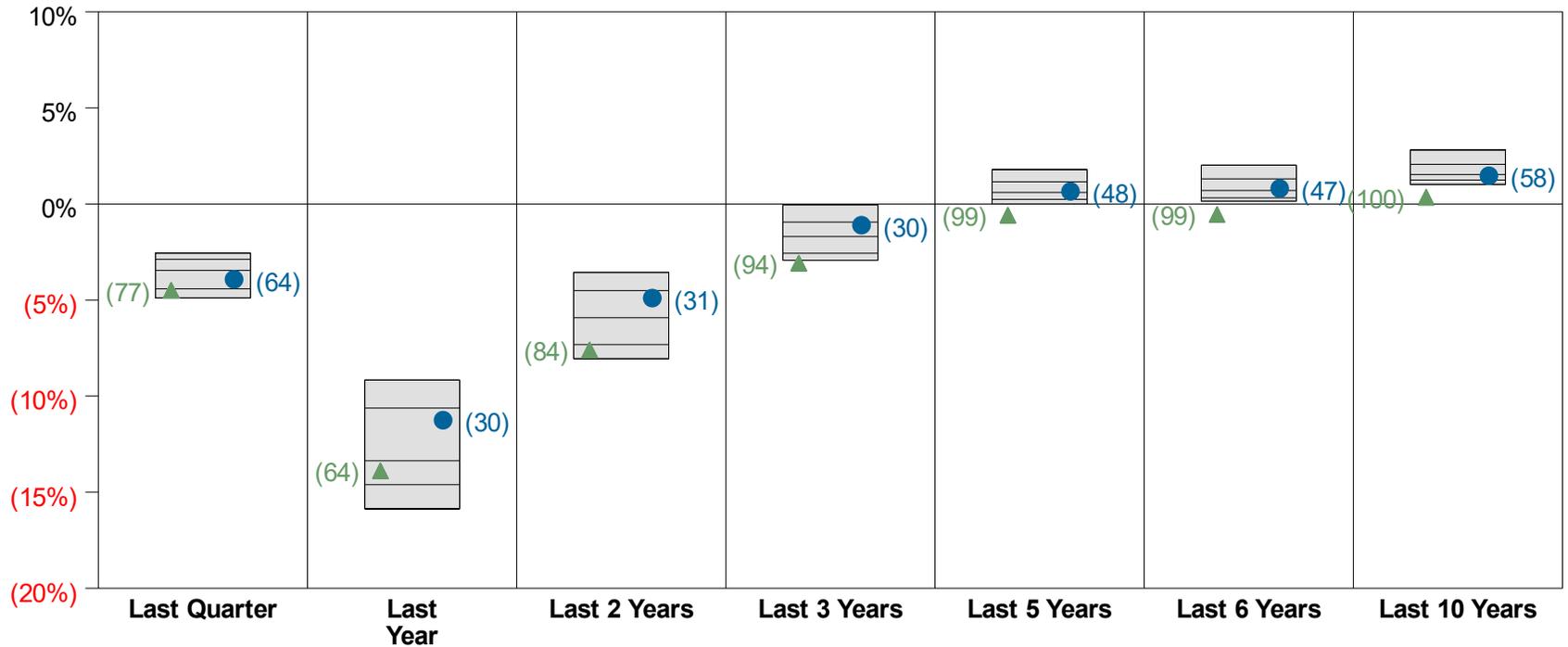
- The Emerging Markets Pool was restructured in 4Q2019 to be a blend of passive and smart beta investments.
- The restructured Pool found its footing in 2021, and outperformed the benchmark by 1.94% over the last year. For the most recent quarter, the Emerging Markets Pool exceeded its benchmark by 1.01% and ranks above median over the last quarter and year.

## Emerging Markets Pool through 09/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Emerging Markets Pool</b>	<b>(10.56%)</b>	<b>(26.17%)</b>	<b>(2.18%)</b>	<b>(2.43%)</b>	<b>0.24%</b>
SSgA Emerging Markets	(11.65%)	(27.97%)	(2.14%)	-	-
L&G SciBeta EM	(8.18%)	(21.81%)	-	-	-
MSCI EM	(11.57%)	(28.11%)	(2.07%)	(1.80%)	1.05%

# Total Fixed Income as of 09/30/22

## Performance vs Public Fund - Domestic Fixed (Gross)



10th Percentile	(2.55)	(9.16)	(3.56)	(0.05)	1.79	2.02	2.81
25th Percentile	(2.88)	(10.62)	(4.51)	(0.94)	1.15	1.30	2.07
Median	(3.45)	(13.37)	(5.92)	(1.69)	0.60	0.70	1.53
75th Percentile	(4.41)	(14.61)	(7.32)	(2.57)	0.25	0.32	1.25
90th Percentile	(4.88)	(15.87)	(8.05)	(2.93)	0.00	0.15	1.02
<b>Total Fixed Income Pool</b>	● (3.96)	(11.29)	(4.94)	(1.14)	0.61	0.77	1.43
Fixed Income Target	▲ (4.49)	(13.88)	(7.59)	(3.07)	(0.58)	(0.54)	0.35

- The Total Fixed Income Pool portfolio outperformed the Fixed Income Target in all time periods shown.
- The transition from intermediate Treasury to Aggregate mandates was completed during the fourth quarter of 2019.

## Total Fixed Income through 09/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Fixed Income</b>	<b>(3.96%)</b>	<b>(11.29%)</b>	<b>(1.14%)</b>	<b>0.61%</b>	<b>1.43%</b>
Fixed Income Target	(4.49%)	(13.88%)	(3.07%)	(0.58%)	0.35%
Blmbg Treasury Intmdt	(3.08%)	(9.23%)	(1.72%)	0.17%	0.59%
ARMB US Aggregate	(4.59%)	(14.27%)	(2.72%)	-	-
<b>Opportunistic Fixed Income</b>	<b>(2.41%)</b>	<b>(11.50%)</b>	<b>(2.04%)</b>	<b>1.35%</b>	<b>3.68%</b>
FIAM Tactical Bond	(2.58%)	(12.39%)	(0.76%)	1.88%	-
Blmbg Aggregate	(4.75%)	(14.60%)	(3.26%)	(0.27%)	0.89%
FIAM REHI	(1.50%)	(7.20%)	(1.28%)	2.05%	-
Blmbg:Universal CMBS xAaa	(3.22%)	(13.45%)	(2.50%)	1.22%	2.31%

## Multi-Asset through 09/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Multi-Asset (T)</b>	<b>(3.10%)</b>	<b>(13.39%)</b>	<b>2.54%</b>	<b>3.73%</b>	-
<b>Alternative Equity Strategies</b>	<b>(7.76%)</b>	<b>(26.24%)</b>	<b>6.11%</b>	<b>5.77%</b>	<b>7.19%</b>
McKinley Healthcare Transformation	(7.76%)	(26.24%)	6.10%	-	-
MSCI ACWI	(6.82%)	(20.66%)	3.75%	4.44%	7.28%
<b>Tactical Allocation Strategies</b>	<b>(5.82%)</b>	<b>(18.03%)</b>	<b>2.24%</b>	-	-
PineBridge	(5.02%)	(17.67%)	2.52%	-	-
Pine Bridge Benchmark	(6.02%)	(19.08%)	0.79%	2.39%	4.14%
Fidelity Signals	(6.64%)	(18.42%)	1.93%	-	-
Fidelity Signals Benchmark	(6.02%)	(19.08%)	1.06%	2.61%	4.85%
<b>Alternative Beta</b>	<b>2.66%</b>	<b>13.43%</b>	<b>0.19%</b>	<b>(0.10%)</b>	-
Man Group Alternative Risk Premia	2.66%	13.43%	2.20%	3.19%	-
T-Bills + 5%	1.67%	5.62%	5.59%	6.15%	5.68%
<b>Alternative Fixed Income</b>	<b>0.04%</b>	<b>8.17%</b>	<b>7.85%</b>	-	-
Crestline (Blue Glacier)	0.35%	7.85%	7.82%	7.19%	7.92%
Prisma Capital (Polar Bear)	(6.98%)	6.07%	3.86%	3.67%	3.96%
Crestline Specialty Lending Fund	2.79%	25.70%	20.55%	18.16%	-
Crestline Specialty Lndg Fd II	1.43%	9.68%	12.43%	-	-
Crestline Specialty Lndg Fd III	2.78%	9.50%	-	-	-
HFRI Fund of Funds Idx	(0.17%)	(6.35%)	4.21%	3.11%	3.48%
T-Bills + 5%	1.67%	5.62%	5.59%	6.15%	5.68%

## Private Equity as of 09/30/2022 With One Quarter Lag

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Private Equity Pool	(5.37)	6.04	24.93	23.18	19.03
PE Target	(15.94)	(17.98)	5.68	5.28	8.70

Callan

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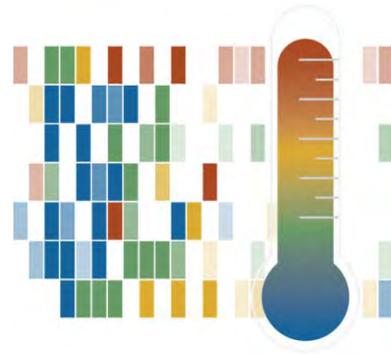
**Callan Update**

# Published Research Highlights from 3Q22

## Research Café: Preliminary 2023 CMAs

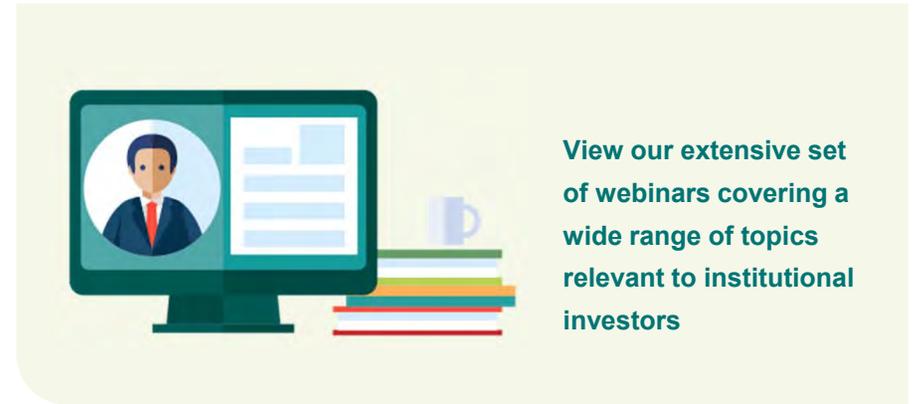


## Real Estate Indicators: Cool Enough or Too Hot?



## On-Demand Webinars

[callan.com/ondemand-webinars](https://callan.com/ondemand-webinars)



## Recent Blog Posts

### Bubbles Bursting Everywhere

Janet Becker-  
Wold

### The Fading Unicorn

Ashley Kahn

### Target Date Funds and the Ever-Evolving Glidepath

Dario Buechi

## Additional Reading

*Alternatives Focus* quarterly newsletter

Active vs. Passive quarterly charts

*Capital Markets Review* quarterly newsletter

Monthly Updates to the Periodic Table

*Market Pulse Flipbook* quarterly markets update

*Real Estate Indicators* market outlook

# Callan Institute Events

Upcoming conferences, workshops, and webinars

## Callan College

### Intro to Alternatives

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with alternative investments like private equity, hedge funds, and real estate and how they can play a key role in any portfolio. In our “Callan College” on Alternatives, you will learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

### Intro to Investments—Learn the Fundamentals

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with basic investment theory, terminology, and practices.

- March 1–2, 2023 – In Person Session – Chicago
- May 24–25, 2023 – Virtual Session via Zoom

Please visit our website at [www.callan.com/events-education](http://www.callan.com/events-education) as we add dates to our 2023 calendar!

## Mark Your Calendar

### Callan Institute’s 2023 National Conference

April 2–4, 2023  
Scottsdale, Arizona

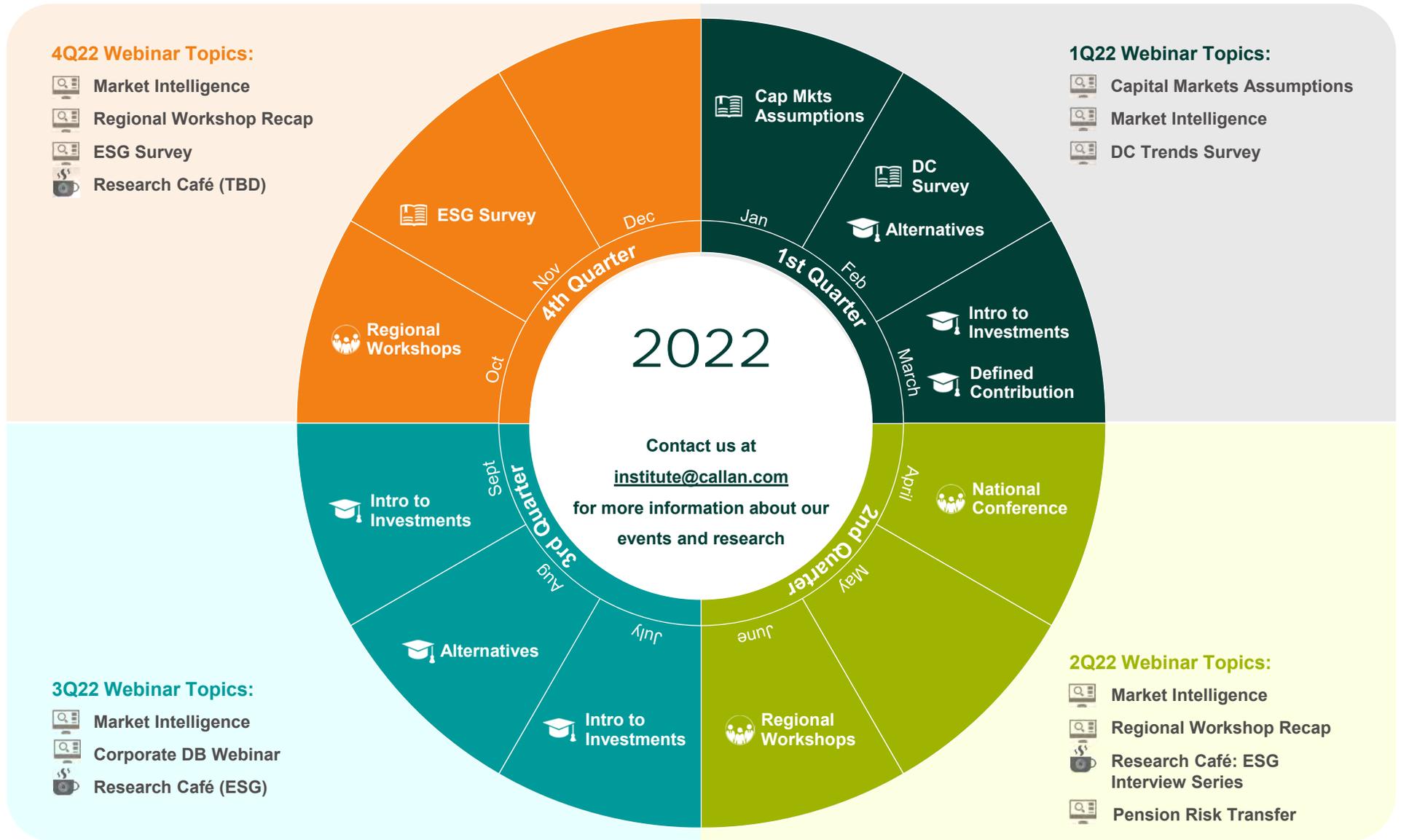
*Watch your email for further details and an invitation.*

## Webinars & Research Café Sessions

### Webinar: Rebalancing During This Unusual Market Environment

November 9, 2022 – 9:30am (PT)

# Content Calendar—Callan Institute



Callan College

Conference/Workshop

Publication

Webinar

Research Café

# Callan Updates

Firm updates by the numbers, as of 9/30/22

**Total Associates: ~200**

## Ownership

- 100% employees
- 71% of employees are equity owners
- 55% of shareholders identify as women or minority

**Total General and Investment Consultants: more than 55**

**Total Specialty and Research Consultants: more than 50**

**Total CFA/CAIA/FRMs: more than 55**

**Total Institutional Investor Clients: more than 475**

**Assets Under Advisement: more than \$3 trillion**

## Key Hires

- Paul Choi, VP, Global Manager Research (Non-U.S. Equity)

## DEI Updates

- Adopted the CFA Institute’s Diversity, Equity, and Inclusion Code in 1Q22
- Launched our new Diversity, Equity & Belonging (DEB) program in 2Q22

**“Not only is our Diversity, Equity & Belonging (DEB) initiative critical to Callan’s success, we hope it will ultimately influence our entire industry. Supporting this initiative from the position of CEO is the best way for me to ensure its success. As the executive sponsor, I can make sure our team has the support and the resources to effect real change.”** — Greg Allen, CEO, Chief Research Officer & DEB Executive Sponsor



# **ALASKA RETIREMENT MANAGEMENT BOARD**

## **Private Equity Annual Tactical Plan**

### **Staff Summary and Overview**

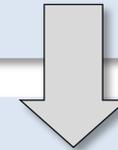
Sean Howard, CFA  
State Investment Officer

Cahal Morehouse  
State Investment Officer

# Key Board Decisions

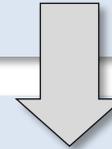
## Determine Investment Objective

- Fund's Purpose
- Governance – who makes which decisions?



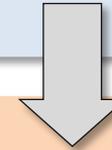
## Determine Asset Allocation

- Strategic
- Tactical



## Oversee Implementation

- Manager Structure – number and types of manager allocations.
- Manager Selection



## Monitor Results

- Are the fund, asset classes and mandates performing as expected?
- Are they achieving objectives?

# ARMB Private Equity Program

- Private Equity Overview
- Market Review
- ARMB Portfolio
- 2021 Commitments
- Pacing Model
- Plan Recommendation
- Summary

# Overview - Characteristics

## Positive Characteristics

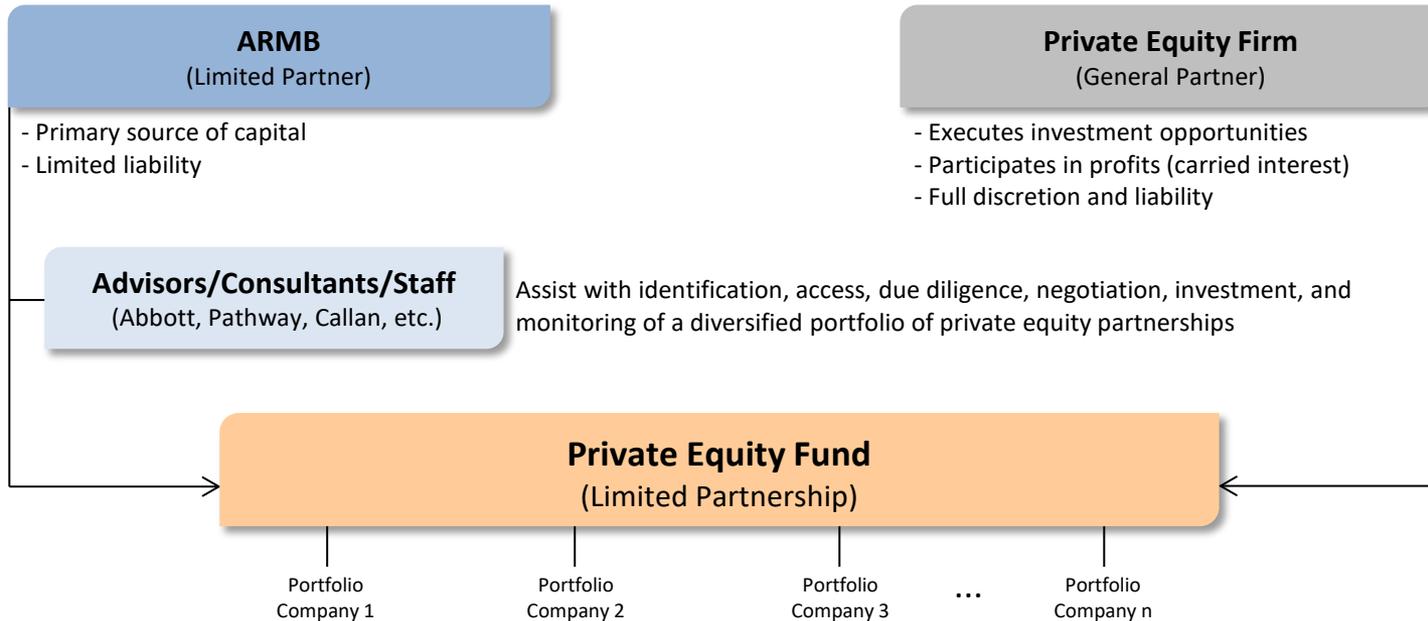
- Larger, more diverse investment universe
- Less efficient companies – opportunity to create value
- Less efficient markets – pricing opportunities
- Control and alignment of interests
- Managed for longer-term value

## Negative Characteristics

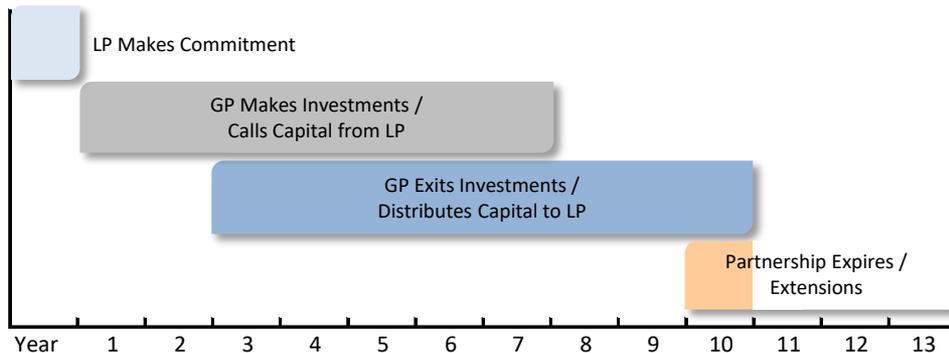
- Illiquid, long-term investments
- High fees and J-curve
- Potential for high leverage
- Portfolio transparency and valuation issues
- Incomplete data and benchmarks

# Overview – Structure

- Private equity investments are made through limited partnerships.



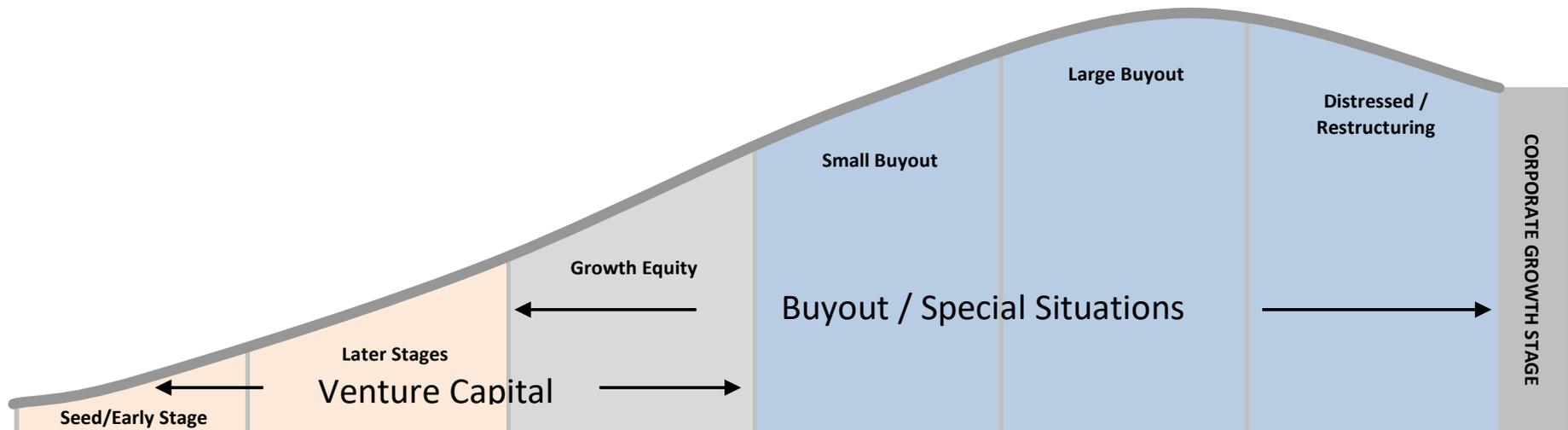
- Typical life cycle of a private equity investment:



# Overview – Primary Strategies

Private equity partnerships are classified into three primary groups:

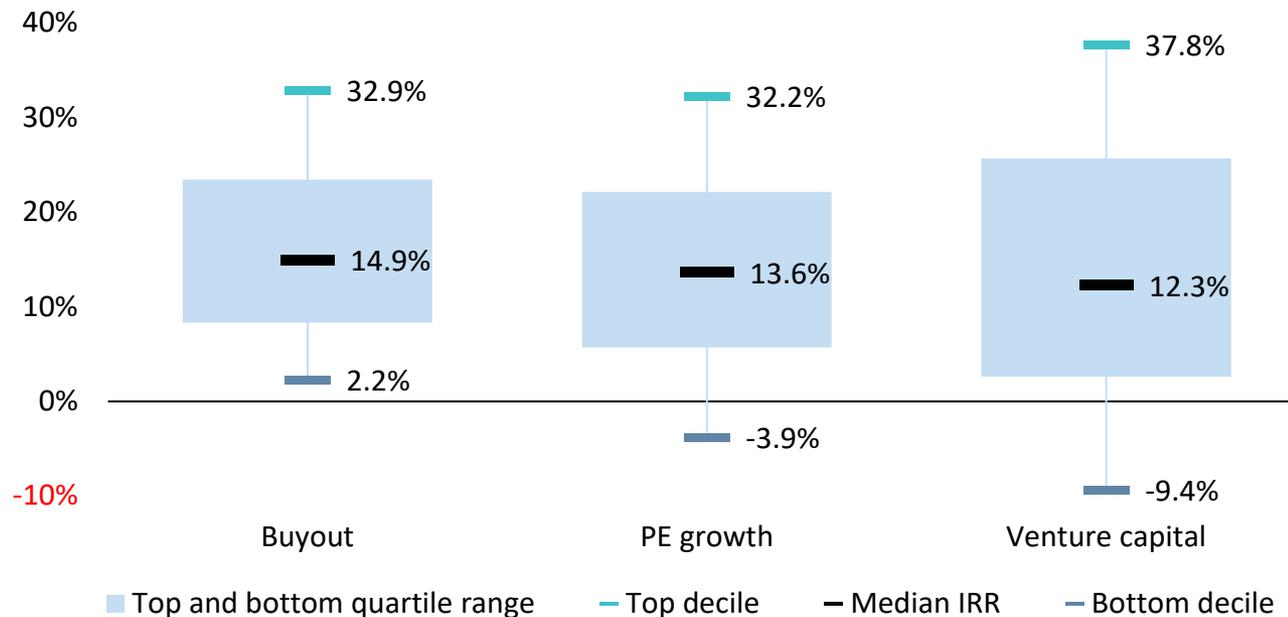
- Venture Capital** Investments in companies developing new products and services. Value creation focuses on managing entrepreneurial companies through high growth. Investments are generally riskier, minority positions.
- Buyout** Control investments in more mature companies. Value creation generally focuses on driving operational and capital structure efficiency.
- Special Situations** Generally buyout style investments with a specialty focus; including groups that have a specific industry, investment style, or capital structure focus. Value creation focuses on specialized skills and efficiency.



# Overview – Program Implementation

- Wide performance dispersion leads to opportunities but also makes manager access, selection, and due diligence critical. Consistently investing with high quality managers is key.

**Fund Performance Dispersion by Strategy (Vintage Years 2002-2016)**

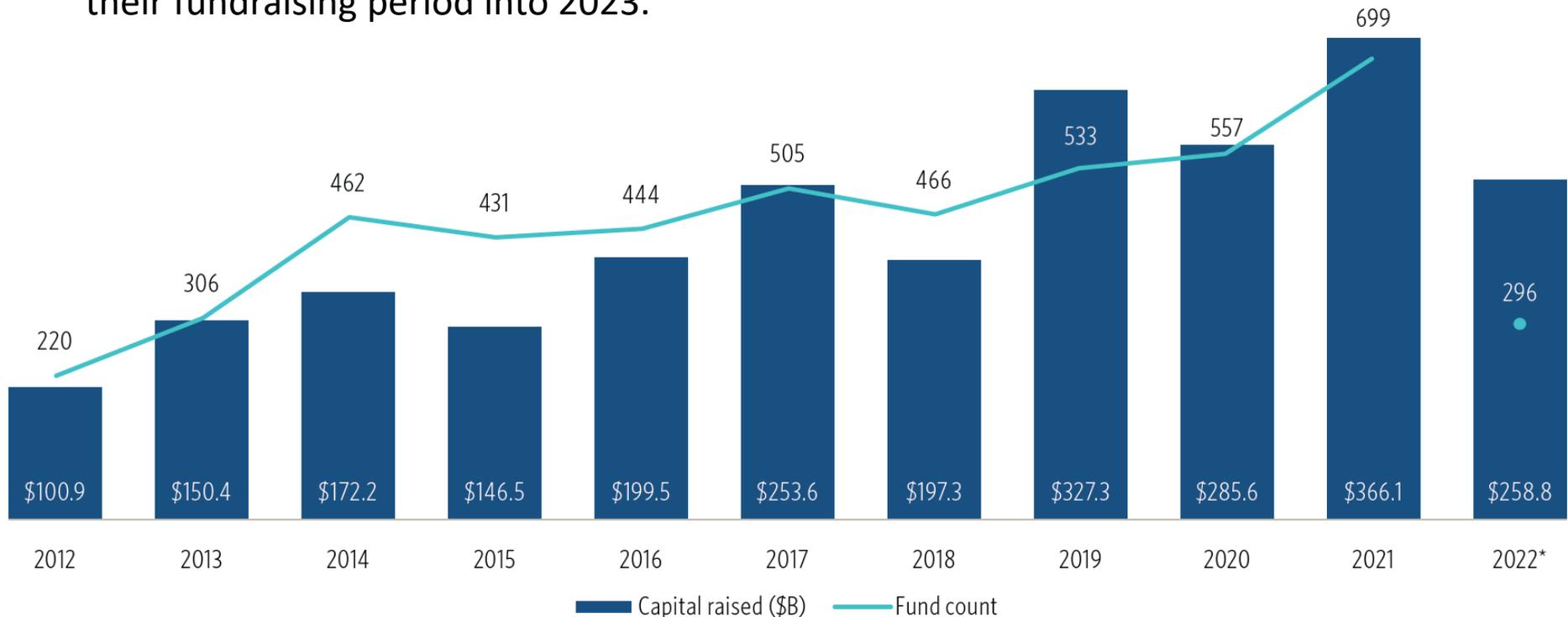


Source: Pitchbook as of December 31, 2021

- The goal is to build a portfolio of quality partnerships diversified by strategy, industry, geography, company stage, manager, and time (vintage year).

# Market – Fundraising

- The heightened number of deals over the past year has further shortened the fundraising cycle, bringing many GP’s back to market ahead of schedule.
- First time and smaller funds are facing headwinds in raising capital as LP’s seek to thin GP relationships in a crowded fundraising environment.
- Many LP’s have reached their commitment targets for 2022 and funds are extending their fundraising period into 2023.

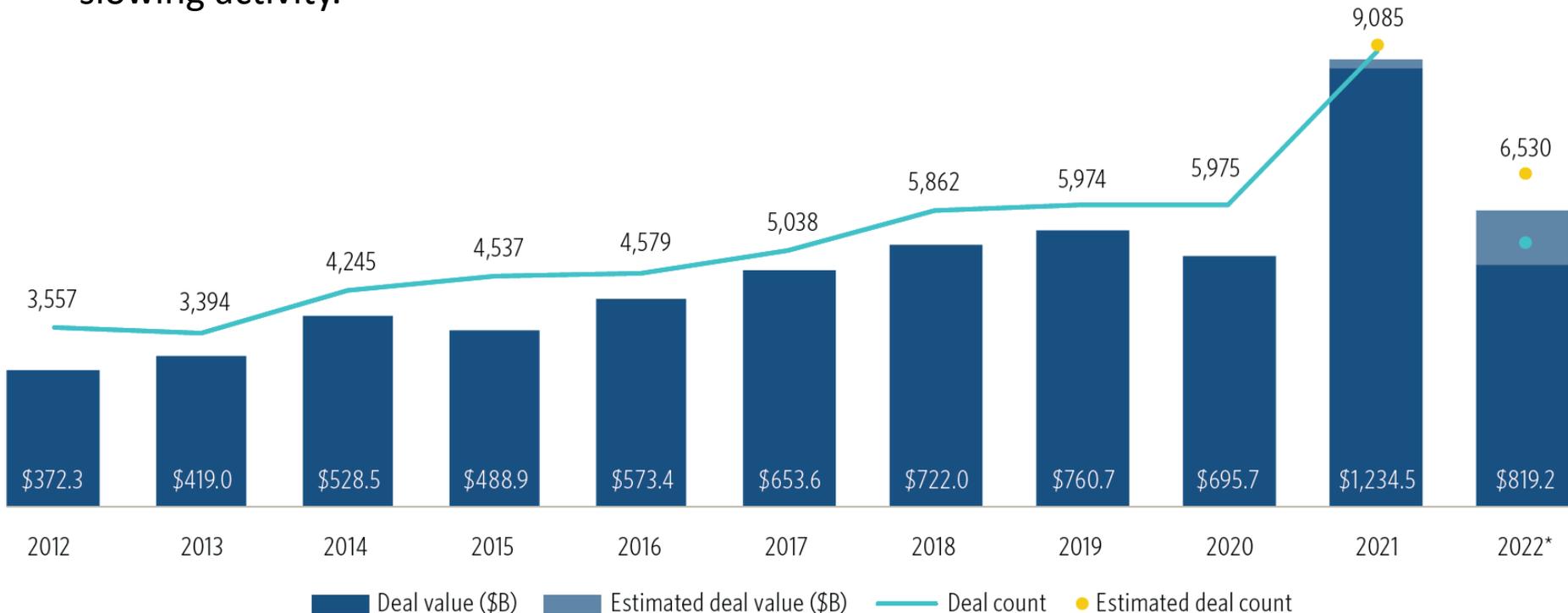


Source: PitchBook | Geography: US

\*As of September 30, 2022

# Market – Deal Activity

- Deal activity has fallen from the highs of 2021 amid tightening economic conditions but remain in line with longer-term trends.
- Add-on investments make up a growing percentage of deal activity as buy and build strategies increase in popularity – 80% of deals are add-on investments.
- The increased cost and reduced availability of debt is changing deal structures and slowing activity.

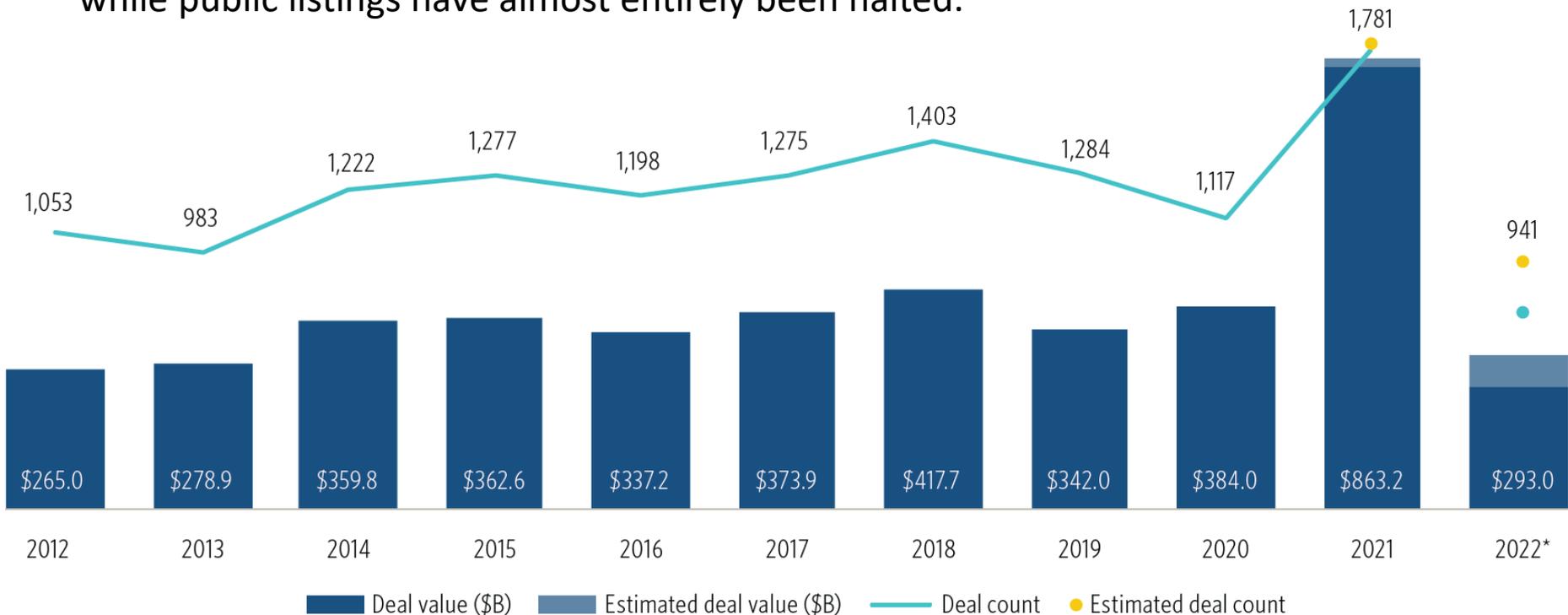


Source: PitchBook | Geography: US

\*As of September 30, 2022

# Market – Exit Activity

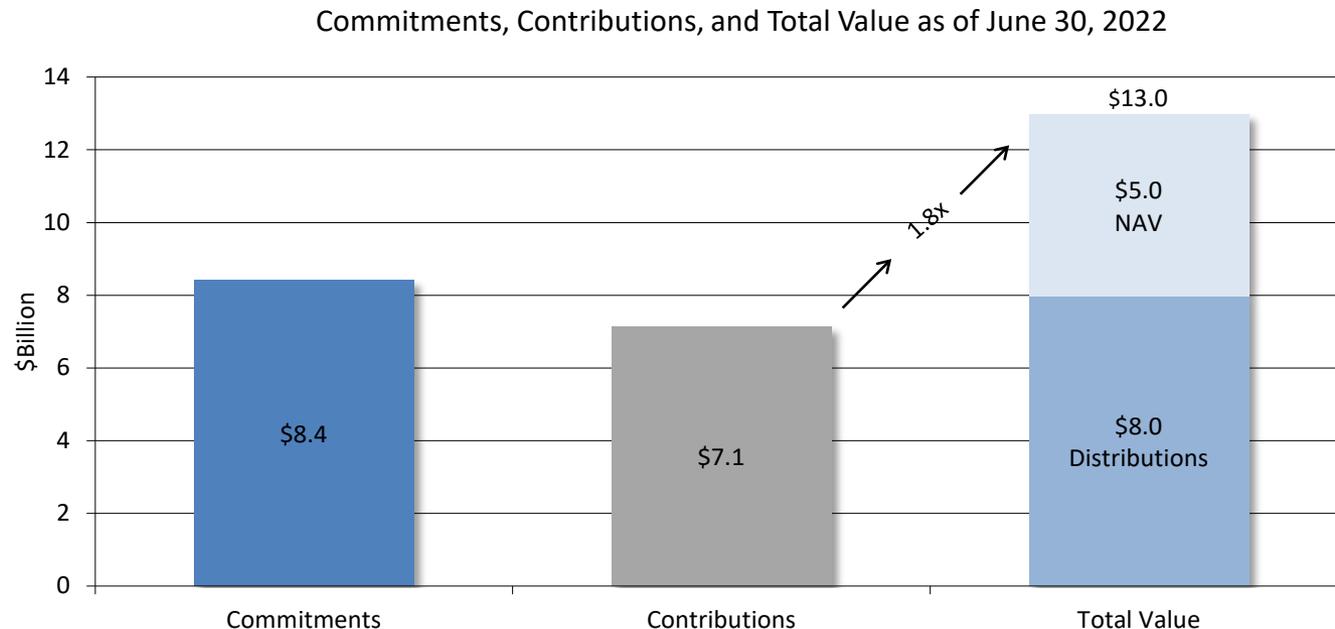
- Exit activity sharply retracted from last year’s record but remains in line with longer-term trends.
- The drawdown in public markets has significantly slowed PE exits while buyer and seller valuation expectations reconverge.
- Exits routes have been equally split between sponsor-backed and corporate acquisitions while public listings have almost entirely been halted.



Source: PitchBook | Geography: US  
 \*As of September 30, 2022

# ARMB Portfolio Performance

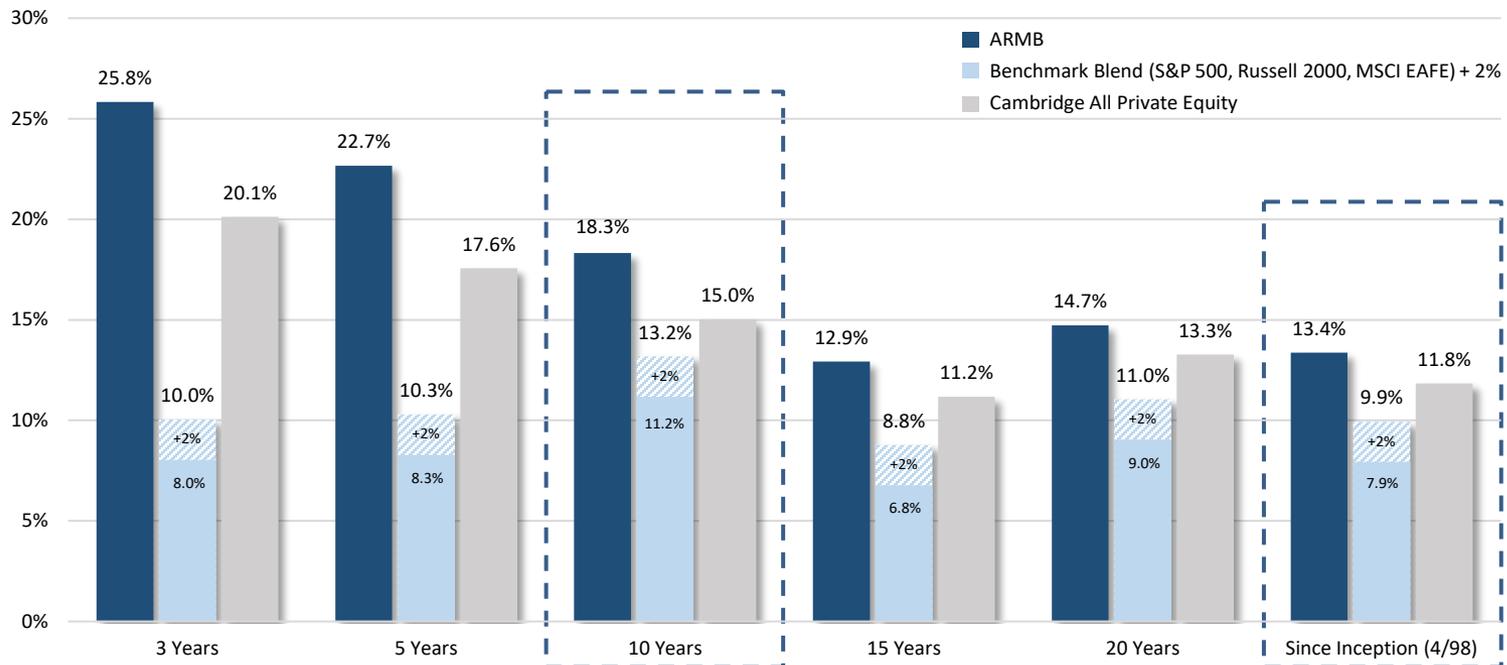
- The ARMB directly invests in private equity and uses gatekeepers, Abbott Capital Management (1998) and Pathway Capital Management (2001). The asset allocation began at 3% and has increased over time to the current level of 14%.
- Overall, the program is in the second quartile with a 13.4% internal rate of return (IRR) and 1.8x multiple on invested capital (MOIC) compared to the Cambridge median IRR of 11.8% and 1.5x MOIC.
- The 10-year time-weighted return for the private equity portfolio is 19.7% versus 9.4% for the PE benchmark blend (1/3 S&P 500, 1/3 Russell 2000, 1/3 MSCI EAFE).



# ARMB Public Market Equivalent (PME)

- The ARMB’s long-term benchmark for private equity is an equal-weighted blend of the S&P 500, Russell 2000, and MSCI EAFE + 2%.
- Since inception, ARMB’s portfolio has delivered a 13.4% internal rate of return (IRR) – outperforming both the PME and Cambridge private equity benchmarks.
- Outperformance has generated \$4.2 billion in additional fund value compared to investing in the public markets alone.
- The portfolio’s 10-year IRR is 18.3%, outperforming the PME benchmark by over 7%.

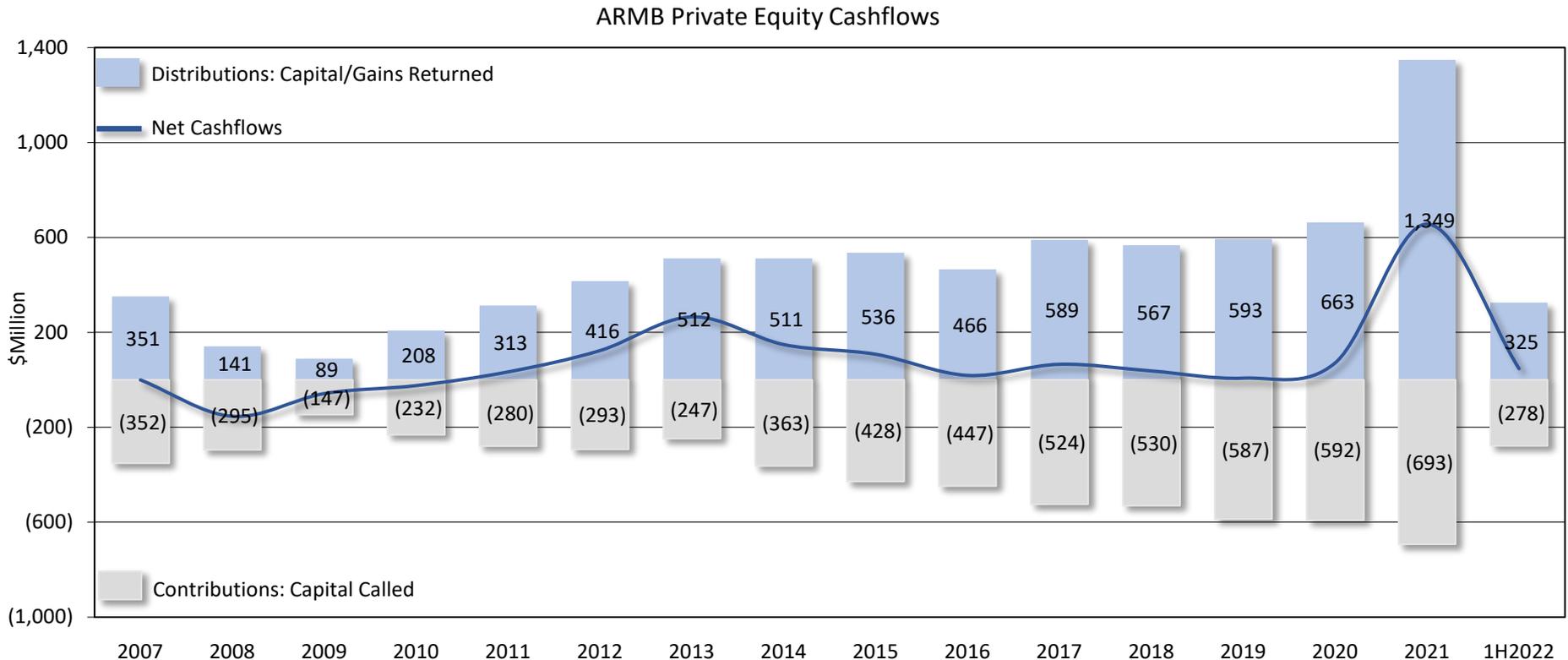
Public Market Equivalent as of June 30, 2022



Source: Refinitiv/Cambridge. Cambridge since inception return only includes vintage years 1998-2022. Returns are annualized and net of fees.

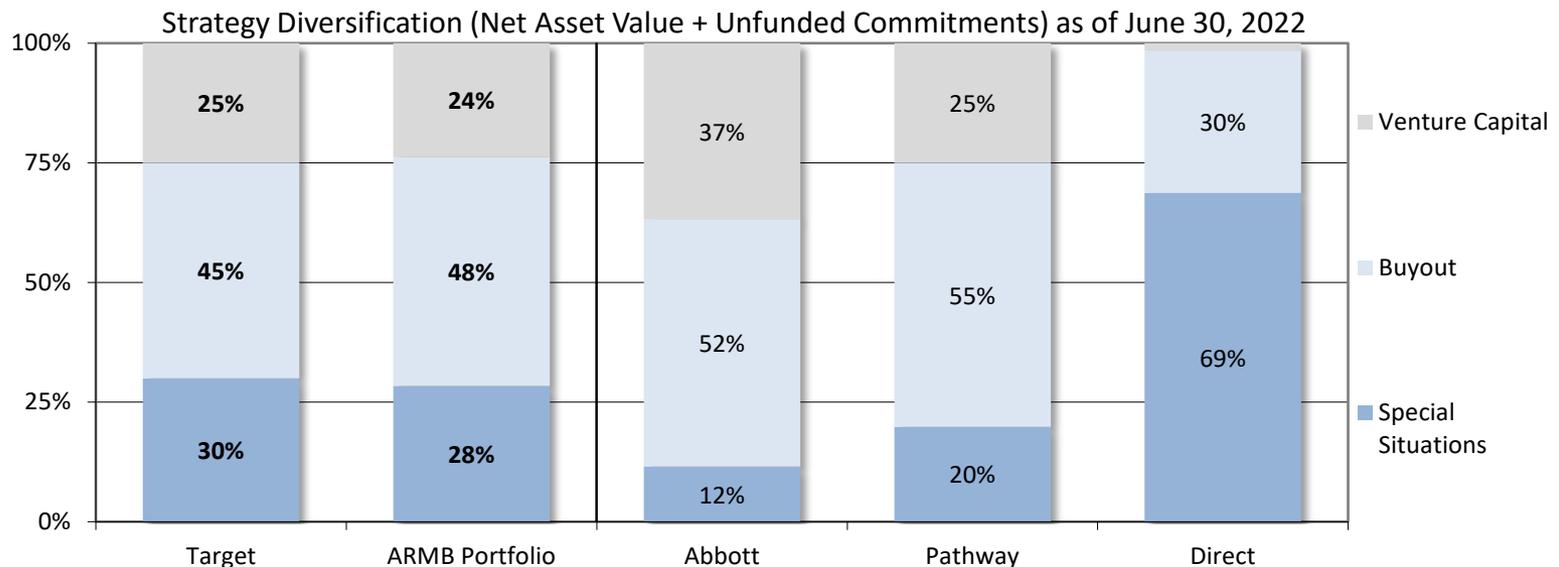
# Portfolio Cash Flows

- Net cash inflows over the past five years were \$862 million – driven by record distributions received during 2021.
- Contributions and distributions remain steady and elevated over recent years as a result of the growth in allocation to private equity and the maturity of the program.



# Diversification by Strategy

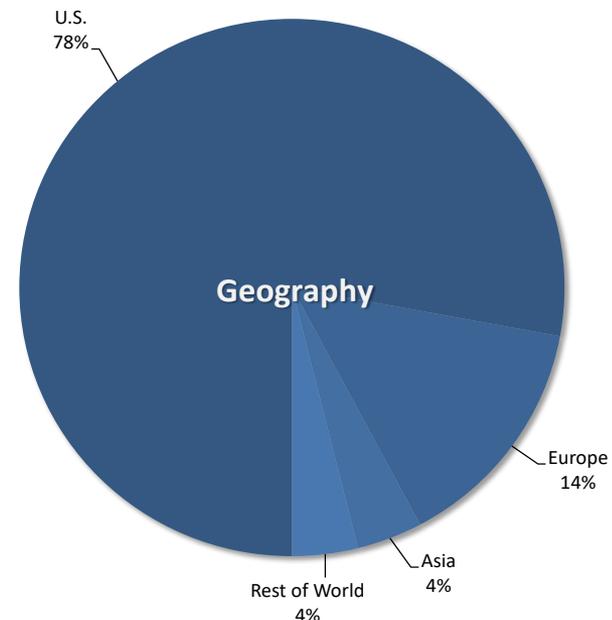
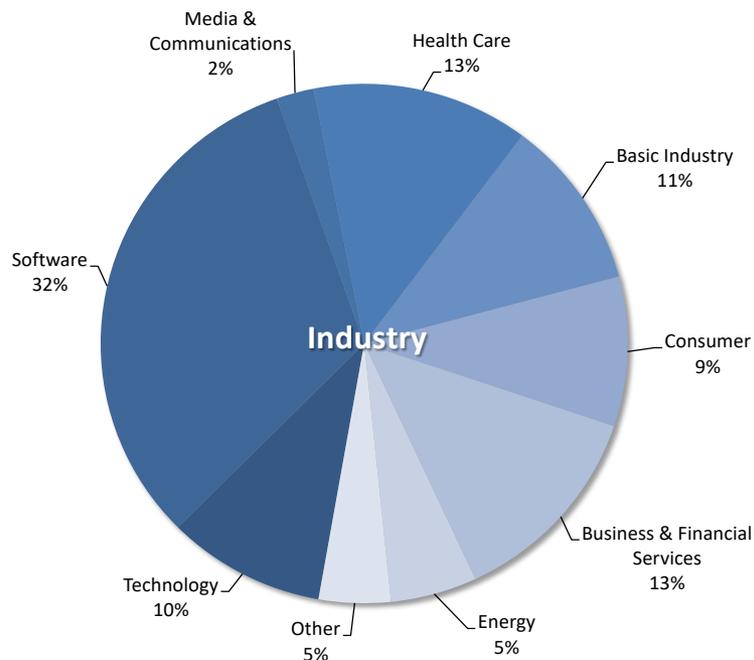
- The portfolio is well-diversified by private equity strategy across venture capital, buyout, and special situations.
- Strategy exposures are within policy bands and near target:
  - Abbott’s portfolio is overweight venture capital. Abbott has decreased VC investments in recent years to lower this exposure.
  - The direct partnership portfolio is overweight special situations and underweight venture capital to achieve a strategy allocation which is close to target.



# Diversification by Portfolio Company

The portfolio is well-diversified by underlying portfolio companies:

- ARMB's private equity portfolio consists of over 7,000 companies.
- Industry exposure is largely reflective of the broader transaction volume within private equity. Software remains the largest industry weight but also has a higher diversification component due to exposure to a variety of end-markets.
- International investments now account for 22% of the portfolio.



# 2021 Commitments

- ARMB committed \$581 million of the targeted \$600 million during 2021.
- Pathway's co-investment program made 14 investments totaling \$33 million while Abbott made 5 co-investments totaling \$20 million.
- Commitments were well-diversified by investment strategy and equally split between Abbott, Pathway, and the direct portfolio.

Commitments for 2021 (\$million)

Manager	Target	Actual	Number of Investments	Investment Strategy					
				Venture	%	Buyout	%	Special Situations	%
Abbott	\$200	\$192	17	\$16	8%	\$156	81%	\$20	10%
Pathway	\$200	\$199	38	\$38	19%	\$111	56%	\$50	25%
Direct	\$200	\$190	5	\$0	0%	\$50	26%	\$140	74%
<b>Total</b>	<b>\$600</b>	<b>\$581</b>	<b>60</b>	<b>\$54</b>	<b>14%</b>	<b>\$317</b>	<b>55%</b>	<b>\$165</b>	<b>36%</b>

- Commitments in 2022 are expected to be approximately \$625 million.

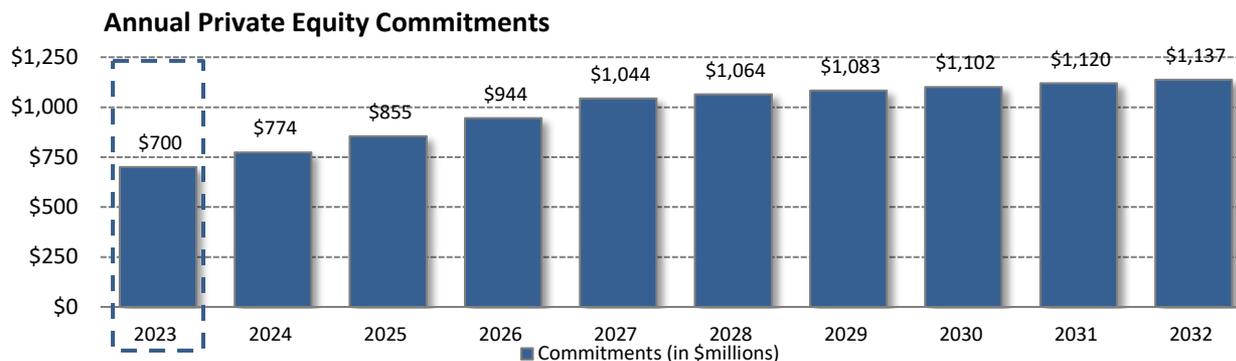
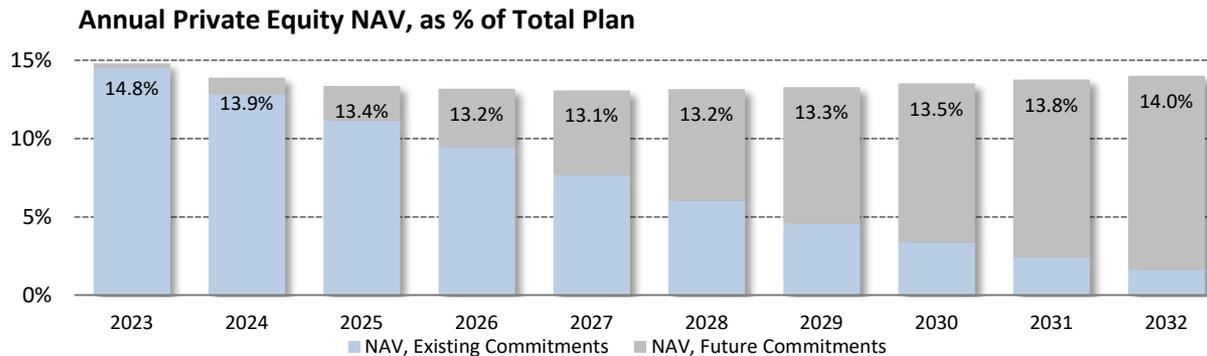
# Pacing Model

- Staff uses a pacing model to project the forward commitments needed to achieve ARMB's targeted allocation to private equity.
- The illiquid nature and cash flow characteristics of private equity necessitate a forward projection to guide the portfolio towards the target allocation over time.
- Considerations:
  - Denominator effect: sharp declines in liquid asset classes result in over-allocations to illiquid asset classes
  - Annual commitment decisions are long-term decisions
  - Vintage year diversification



# Commitment Pacing Recommendation

- ARMB’s long-term allocation target for private equity increased from 12% to 14% at the beginning of FY22.
- Although private equity is above target, an increase in commitment pacing is needed to offset projected distributions and maintain the targeted allocation.
- Staff recommends a 2023 commitment target of \$700 million, split equally between Abbott, Pathway, and direct partnership investments.



# Summary

- ARMB's mature private equity portfolio greatly benefitted from a year in which deal activity and distributions were at historical highs.
- Private markets are not excluded from economic headwinds though staff expects the portfolio to continue to deliver a meaningful return premium over public markets through various market cycles.
- ARMB has a well-diversified private equity program with performance that has had a significant positive impact on the plan.
- Staff will be evaluating ways to improve the structure of ARMB's private equity portfolio with a focus on return/cost efficiency.

# Appendix A:

## 2022 Commitments – Buyout 1 of 2

Strategy	Partnership Fund	Description	Amount	% Total	Date	Manager
	AHC Co Invest	Global B2C consumer cloud Salesforce consultancy.	\$5,000,000	0.9%	4/26/21	Abbott
	Blue Point - Speedstar Co Invest	Co-investment alongside Blue Point IV in a leading U.S.-based distributor of aftermarket driveline and transmission components.	\$4,000,000	0.7%	11/20/20	Pathway
	CapVest Equity Partners V	Strategy focused on relative value investments across: consumer, industrials, business services, tech & tech infrastructure and healthcare.	\$19,483,260	3.4%	11/23/21	Abbott
	Charlesbank X	Value-oriented buyout investments in middle-market businesses based in the U.S.	\$10,000,000	1.7%	1/15/21	Pathway
	Clearlake - Falcon Co Invest	Co-investment alongside Clearlake VI in a provider of technology-enabled services and software to healthcare organizations.	\$3,000,000	0.5%	9/17/21	Pathway
	Clearlake - Icon II (Sec)	Single-asset continuation vehicle for a provider of enterprise data integrity software.	\$2,000,000	0.3%	3/19/21	Pathway
	Clearlake - Icon III (Sec)	Single-asset continuation vehicle for a designer, marketer, and distributor of branded automotive aftermarket parts.	\$2,000,000	0.3%	4/13/21	Pathway
	Clearlake - Icon IV (Sec)	Single-asset continuation vehicle for a provider of enterprise security solutions software.	\$2,000,000	0.3%	5/14/21	Pathway
	Clearlake - Icon V (Sec)	Single-asset continuation vehicle for the provider of a leading healthcare, governance, risk, and compliance Software-as-a-Service platform.	\$2,000,000	0.3%	8/27/21	Pathway
Buyout	Genstar Capital Partners X	Control-oriented investments in middle-market companies in the financial services, software, industrial technology, and healthcare sectors.	\$15,000,000	2.6%	4/1/21	Abbott
	Genstar Capital Partners X	Control-oriented investments in middle-market companies in the financial services, software, industrial technology, and healthcare sectors.	\$8,500,000	1.5%	4/1/21	Pathway
	Genstar Capital Partners X	Control-oriented investments in middle-market companies in the financial services, software, industrial technology, and healthcare sectors.	\$25,000,000	4.3%	4/1/21	Direct
	Genstar Capital Partners X Opp	Co-invest alongside flagship fund in middle-market businesses across four core industries: financial services, industrial technology, software, and healthcare.	\$1,500,000	0.3%	8/12/21	Pathway
	Genstar Capital Partners X Opp	Co-invest alongside flagship fund in middle-market businesses across four core industries: financial services, industrial technology, software, and healthcare.	\$5,000,000	0.9%	4/1/21	Abbott
	Great Hill Equity Partners VIII	Predominantly control investments (~75%) in high-growth, middle-market businesses across four broad industry verticals.	\$20,000,000	3.4%	11/1/21	Abbott
	Harvest - Granicus Co Invest	Co-investment alongside Harvest VIII in a leading provider of SaaS-based citizen engagement and workflow solutions.	\$4,000,000	10.9%	1/29/21	Pathway
	Hellman & Friedman Capital Partners X	Buyouts, recapitalizations, and restructurings of large-cap companies across a variety of industries operating primarily in the United States and Europe.	\$20,000,000	3.4%	5/10/21	Abbott
	Hellman & Friedman Capital Partners X	Buyouts, recapitalizations, and restructurings of large-cap companies across a variety of industries operating primarily in the United States and Europe.	\$10,130,000	1.7%	5/10/21	Pathway
	Inflexion Buyout VI	Control buyouts in high-growth, middle-market companies, primarily in the United Kingdom.	\$9,864,240	1.7%	8/20/21	Pathway
	ISH Co Invest Aggregator	Leading IT management software company.	\$5,250,000	0.9%	4/30/21	Abbott

# Appendix A:

## 2022 Commitments – Buyout 2 of 2

Strategy	Partnership Fund	Description	Amount	% Total	Date	Manager
	Nautic - IRC Superman Co Invest	Co-investment alongside Nautic VIII and IX in a provider of kidney dialysis services for patients suffering from end-stage renal disease.	\$3,200,000	0.6%	1/20/21	Pathway
	Nautic Partners X	Buyout, growth, and consolidation investments in middle-market companies in the outsourced services, industrial products, and healthcare sectors.	\$10,000,000	1.7%	7/19/21	Pathway
	Nordic Capital - Vinland Co Invest	Follow-on co-investments alongside Nordic Capital IX in a provider of electronic collection services and analysis of critical patient data for pharma companies.	\$1,495,327	0.3%	4/19/21	Pathway
	Odyssey - Glove Co Invest	Co-investment alongside Odyssey VI in a leading distributor and manufacturer of consumable personal protective equipment.	\$3,330,000	0.6%	2/16/21	Pathway
	Orangewood WWB Co Invest	Quick Service Restaurant (QSR) franchisee.	\$5,100,000	0.9%	10/18/21	Abbott
	Prairie Capital VII QP	Lower middle-market buyouts of predominantly family/founder-owned businesses.	\$10,800,000	1.9%	4/6/21	Abbott
	Quad-C - MNX Co Invest	Co-investment alongside Quad-C X in a provider of specialized logistics services.	\$2,000,000	0.3%	12/9/21	Pathway
	Quad-C Partners X	Control-oriented investments in acquisitions and recapitalizations of middle-market companies in conjunction with existing management teams.	\$10,000,000	1.7%	6/24/21	Pathway
	Resolute V	Control investments in middle-market companies located primarily in North America.	\$10,000,000	1.7%	3/31/21	Pathway
Buyout	Ridgemont - Co Invest III - 2	Follow-on co-investment alongside Ridgemont III in a tech-enabled, third-party logistics provider.	\$331,781	0.1%	12/1/21	Pathway
	Ridgemont - Co Invest III TEC	Tech-enabled business services.	\$705,035	0.1%	11/16/21	Abbott
	Ridgemont - Co Invest Omni	Co-investment alongside Ridgemont III in a tech-enabled, third-party logistics provider.	\$1,320,000	0.2%	2/5/21	Pathway
	Ridgemont Equity Partners IV	Growth buyout investments in middle markets in five sectors: healthcare, technology, infrastructure/power, tech-enabled services, and industrial growth.	\$20,000,000	3.4%	10/29/21	Abbott
	Riverside Micro-Cap Fund VI	Invests in assets with EBITDAs less than \$10 million in software, business services, franchising, niche manufacturing and branded consumer and HC	\$20,000,000	3.4%	8/26/21	Abbott
	Riverside Micro-Cap Fund VI	Invests in assets with EBITDAs less than \$10 million in software, business services, franchising, niche manufacturing and branded consumer and HC	\$25,000,000	4.3%	8/26/21	Direct
	TA XIV	Global growth equity and buyout investments in profitable companies across technology, business and financial services, consumer and healthcare.	\$10,000,000	1.7%	5/27/21	Abbott
	Thomas Bravo - Mirasol Co Invest	Co-investment alongside Thoma Bravo XII, Thoma Bravo XIII, and Thoma Bravo XIV in a provider of a cloud-based software and data analytics for real estate.	\$3,310,000	0.6%	4/16/21	Pathway
	Trident VIII Celestial Co-Invest	Co-investment alongside Trident VIII (Stone Point) in a leading global provider of data and analytics to the real estate and insurance sectors.	\$4,000,000	0.7%	4/20/21	Pathway
	Trident VIII Skopima Co-Invest	Co-investment alongside Trident VIII (Stone Point) in a provider of eDiscovery, document review, risk management, and related consulting services.	\$2,570,000	0.4%	4/27/21	Pathway
	<b>Buyout Subtotals</b>		<b>\$316,889,643</b>	<b>54.6%</b>		

# Appendix A:

## 2022 Commitments – Venture

Strategy	Partnership Fund	Description	Amount	% Total	Date	Manager
	Battery Select I	Follow-on venture capital investments in Battery's highest conviction portfolio companies.	\$4,000,000	0.7%	2/10/21	Pathway
	COCO Growth Holding	Secondary market transaction involving 16 portfolio companies held by three Holtzbrinck Ventures-managed funds.	\$4,017,556	0.7%	12/29/21	Pathway
	CRV XVII	Early-stage technology venture capital fund. The firm seeks investments in high-risk, disruptive technologies across consumer/media, enterprise.	\$1,297,500	0.2%	11/1/21	Abbott
	H 2021 SPV	International fintech super-app.	\$4,300,000	0.7%	4/30/21	Abbott
	Insight - Armis 2 Co Invest	Follow-on co-investment alongside Insight X and XI in a cloud-based cybersecurity platform for managed, unmanaged, and internet of things (IoT) devices.	\$68,056	0.0%	2/16/21	Pathway
<b>Venture Capital</b>	Insight - Armis 3 Co Invest	Follow-on co-investment alongside Insight X and Insight XI in a cloud-based cybersecurity platform for managed, unmanaged, and IoT devices.	\$329,693	0.1%	11/4/21	Pathway
	IVP XVII	Late- and expansion-stage venture capital investments in information technology companies.	\$10,000,000	1.7%	1/20/21	Pathway
	NEA 18	Early-stage venture capital investments in technology and healthcare companies, primarily in the United States.	\$6,000,000	1.0%	12/22/21	Pathway
	NEA 18 VGE	Late-stage venture capital and growth equity investments in technology and healthcare companies, primarily in the United States.	\$4,000,000	0.7%	12/22/21	Pathway
	Oak HC/FT Partners IV	Investments in healthcare and fintech businesses. The remainder of the portfolio will be growth businesses, including a few minority transactions.	\$10,000,000	1.7%	2/17/21	Abbott
	YCCG21	Late-stage investments primarily in companies that have completed the YC accelerator program.	\$10,000,000	1.7%	6/25/21	Pathway
	<b><i>Venture Capital Subtotals</i></b>		<b><i>\$54,012,805</i></b>	<b><i>9.3%</i></b>		

# Appendix A:

## 2022 Commitments – Special Situations

Strategy	Partnership Fund	Description	Amount	% Total	Date	Manager
	Centerbridge CP IV	Control-oriented private equity and distressed debt-for-control investments in a variety of industries.	\$10,000,000	3.3%	1/30/20	Pathway
	Clearlake Capital Partners VII	Control Investments in special situations, distressed in middle market technology, industrial, and consumer services.	\$10,000,000	1.7%	9/17/21	Pathway
	Clearlake Capital Partners VII	Control Investments in special situations, distressed in middle market technology, industrial, and consumer services.	\$20,000,000	3.4%	9/17/21	Abbott
	Clearlake Capital Partners VII	Control Investments in special situations, distressed in middle market technology, industrial, and consumer services.	\$50,000,000	8.6%	9/17/21	Direct
	Insight Partners X Follow-On	Follow-on investments in existing Insight X portfolio companies.	\$4,000,000	0.7%	3/31/21	Pathway
<b>Special Situations</b>	Insight Partners XII	Growth-stage investments in companies operating in the software, software-enabled services, and internet sectors.	\$6,000,000	1.0%	5/14/21	Pathway
	Insight Partners XII	Growth-stage investments in companies operating in the software, software-enabled services, and internet sectors.	\$40,000,000	6.9%	5/27/21	Direct
	Summit GE XI	Minority, control, and expansion growth equity investments primarily in the United States.	\$10,000,000	1.7%	10/1/21	Pathway
	Summit GE XI	Minority, control, and expansion growth equity investments primarily in the United States.	\$50,000,000	8.6%	9/3/21	Direct
	TA XIV	Growth-focused investments in rapidly growing companies in North America and Europe in a variety of sectors.	\$10,000,000	1.7%	5/27/21	Pathway
	<b><i>Special Situations Subtotals</i></b>		<b>\$210,000,000</b>	<b>36.2%</b>		
	<b>Abbott Subtotal</b>		<b>\$191,935,795</b>	<b>33.0%</b>		
	<b>Pathway Subtotal</b>		<b>\$198,966,653</b>	<b>34.3%</b>		
	<b>Direct Subtotal</b>		<b>\$190,000,000</b>	<b>32.7%</b>		
	<b>TOTAL (\$MM)</b>		<b>\$580,902,448</b>	<b>100.0%</b>		

December 1, 2022



## **ARMB Private Equity Portfolio**

Annual Review and Performance  
Analysis

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**Ashley Kahn, CAIA**  
Private Equity Consulting

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# Private Equity Discussion Topics

- Callan's Pacing Model Assumptions
- Private Equity Market Trends
- ARMB Program History and Overview
- Performance
- Portfolio Diversification
- Manager Profiles and Performance:
  - Abbott Capital Management
  - Pathway Capital Management
  - Treasury Portfolio
- Summary and Observations

# Callan's Pacing Model Assumptions

## Total Plan Assumptions

- Callan's pacing model projects the growth of the total plan over the next 10 years, to determine the growth of the private equity allocation.
- It incorporates actuarial cash flows and the projected total plan investment return, provided by ARMB Staff.
- Net growth rate of 1.6%-6.0% per year.
- The model begins with the 2Q22 total plan value of \$30.52 billion.

## Private Equity Assumptions

- Historical cash flows from the Refinitiv/Cambridge private equity database are used to project future cash flows of the program.
  - Each vintage year, both historical and future, is modeled individually.
  - Cash flow projections use average contribution and distribution rates from 2000-2021, therefore incorporating both up and down markets.
  - The model also incorporates Callan's private equity Capital Markets Assumptions, to determine the growth of the portfolio's unrealized value.
- The model begins with ARMB's private equity values as of 2Q22.

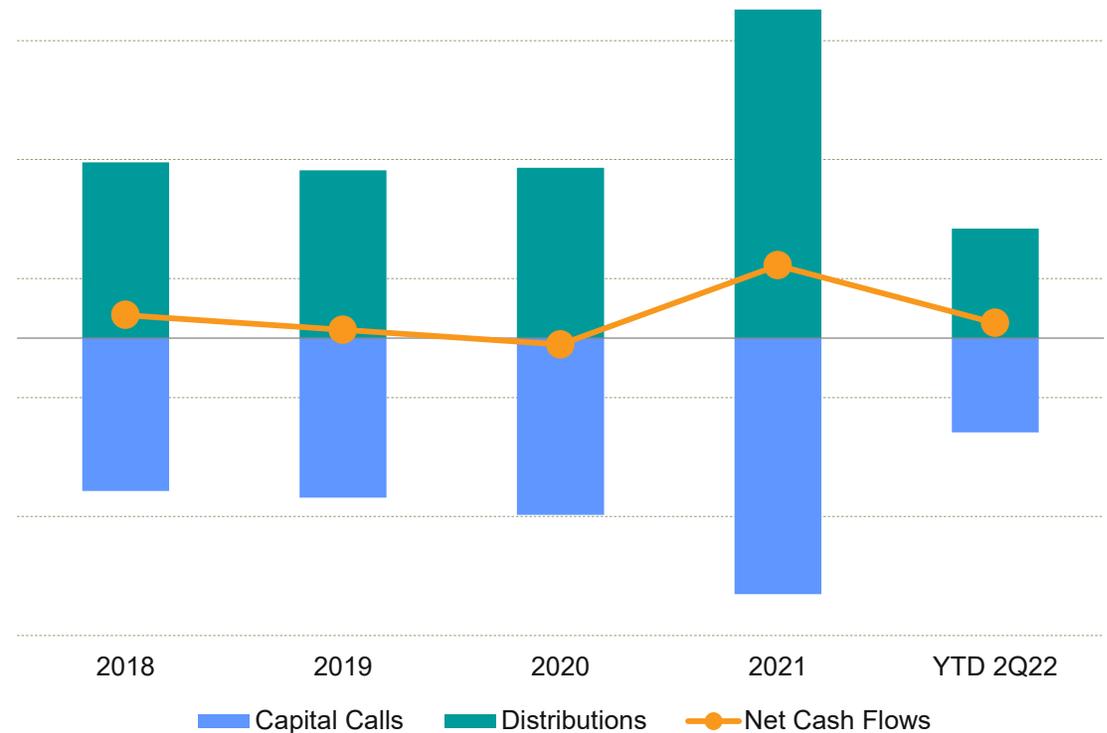
Callan has been leveraging a proprietary private equity pacing model for 30+ years. Callan's model was revamped in 2018 to improve precision by leveraging historical data to inform future cash flows.

# Private Equity Market Trends

## 2021 - An Exceptional Year

- 2021 was an exceptional year for private equity cash flows, with record levels of distributions driven by a surge in exit activity.
- While investors should expect a drop in distributions compared to last year, the data does not suggest it will be a significant cliff.
- So far this year, LP cash flows appear to be returning back to normal, pre-pandemic levels.

LP Cash Flows by Year



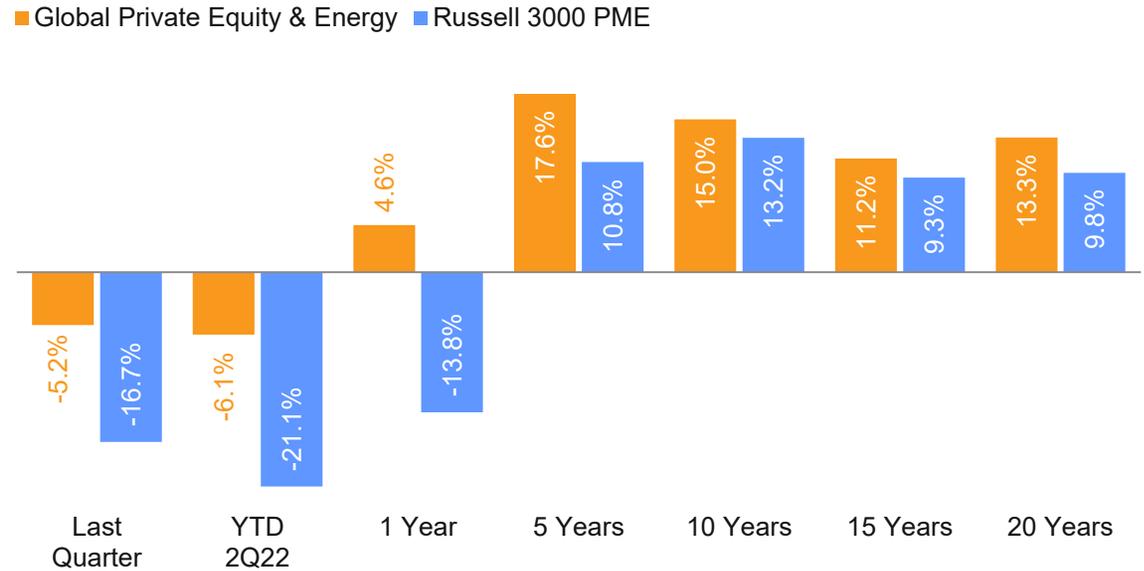
Source: Refinitiv/Cambridge Global Private Equity & Energy.

# Private Equity Market Trends

## Smoothing Effect in Performance

- As is typical for the asset class, private equity returns have experienced a smoothing effect in 2022 compared to the sharp declines seen in the public markets.
- Private equity is only down about a third as much as the public markets during 1H22, on a PME basis.
- Venture capital and growth equity experienced the sharpest declines so far this year, given their technology focus as well as post-IPO public equity holdings.

Net IRRs as of 06/30/2022



## Private Company Valuations

- Private equity companies are typically valued internally by the manager on a quarterly basis. Valuations are based on the operating metrics of the company, DCF analyses, recent comparable transactions, and public market comps.

Net IRRs by Strategy as of 06/30/2022

Strategy	Last Quarter	YTD 2Q22	1 Year	5 Years	10 Years	20 Years
Venture Capital	-8.5%	-11.8%	0.8%	25.2%	19.5%	12.1%
Growth Equity	-7.7%	-11.3%	-3.1%	19.7%	16.1%	14.1%
Buyouts	-4.5%	-5.1%	5.4%	17.6%	15.8%	14.5%
Mezzanine	-0.5%	1.1%	9.3%	11.9%	11.6%	11.0%
Credit Opportunities	-1.7%	1.1%	5.4%	7.4%	8.8%	9.8%
Control-Oriented Distressed	-1.1%	2.3%	20.5%	14.5%	13.4%	12.0%
Private Energy	3.3%	14.5%	27.7%	4.9%	4.0%	7.8%

Source: Refinitiv/Cambridge. PME: Public Market Equivalent.

# Private Equity Market Trends

## “Flight to Quality” in Fundraising

- Fundraising is nearly flat this year, in terms of the dollars raised.
- “Flight to quality” – significantly fewer funds have closed this year, indicating that fundraising has been concentrated in larger managers.
- Fundraising timelines have extended, due to so many funds in the market, slowing distributions, and constrained LP commitment budgets from the “denominator effect”.

Annual Fundraising



## Spike in 2021 Deal Activity

- Annual deal activity exceeded \$2 billion in 2021, nearly doubling from prior years.
- The pace of investment has slowed down from its peak in 2022, and appears to be returning to pre-pandemic levels.

Annual Deal Activity



Source: PitchBook

# Private Equity Market Trends

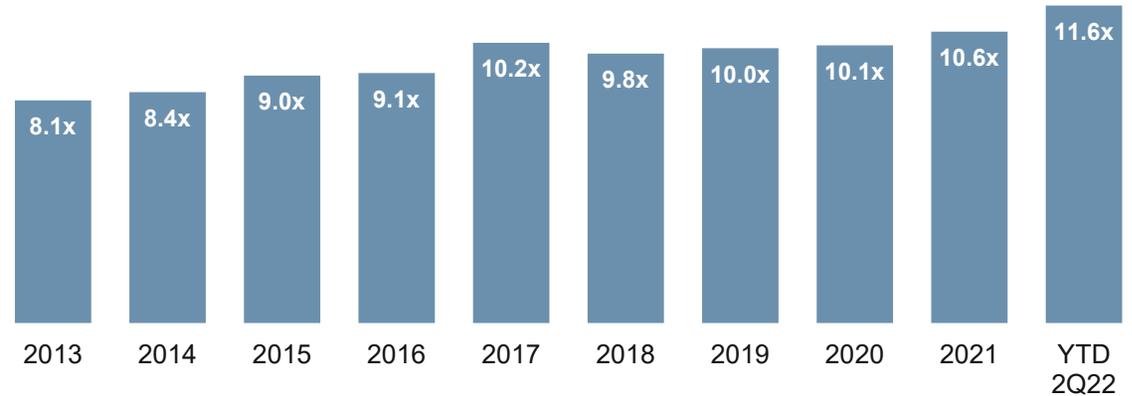
## Buyout Valuations Remain Strong

- Buyout valuations continued to rise in 1H22, and have not yet experienced the declines seen in the public markets.
- Quality assets continue to transact at high prices. Managers are holding weaker assets, as those exit prospects are less certain.

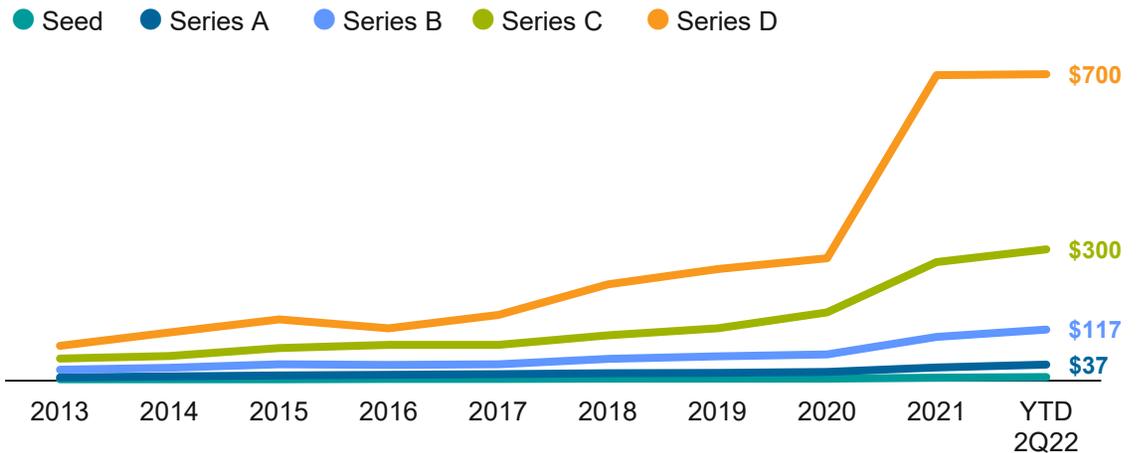
## Venture Capital Valuations Plateau

- In response to the downturn in the public technology markets, venture capital valuations have largely plateaued in 2022. Late-stage VC has been especially impacted, given late-stage companies are closer to an IPO.
- Many venture-backed companies are delaying their next financing round to avoid a mark down in valuation. Many will have to raise new capital over the next few quarters, however, which may impact valuations.

Buyout EBITDA Multiples



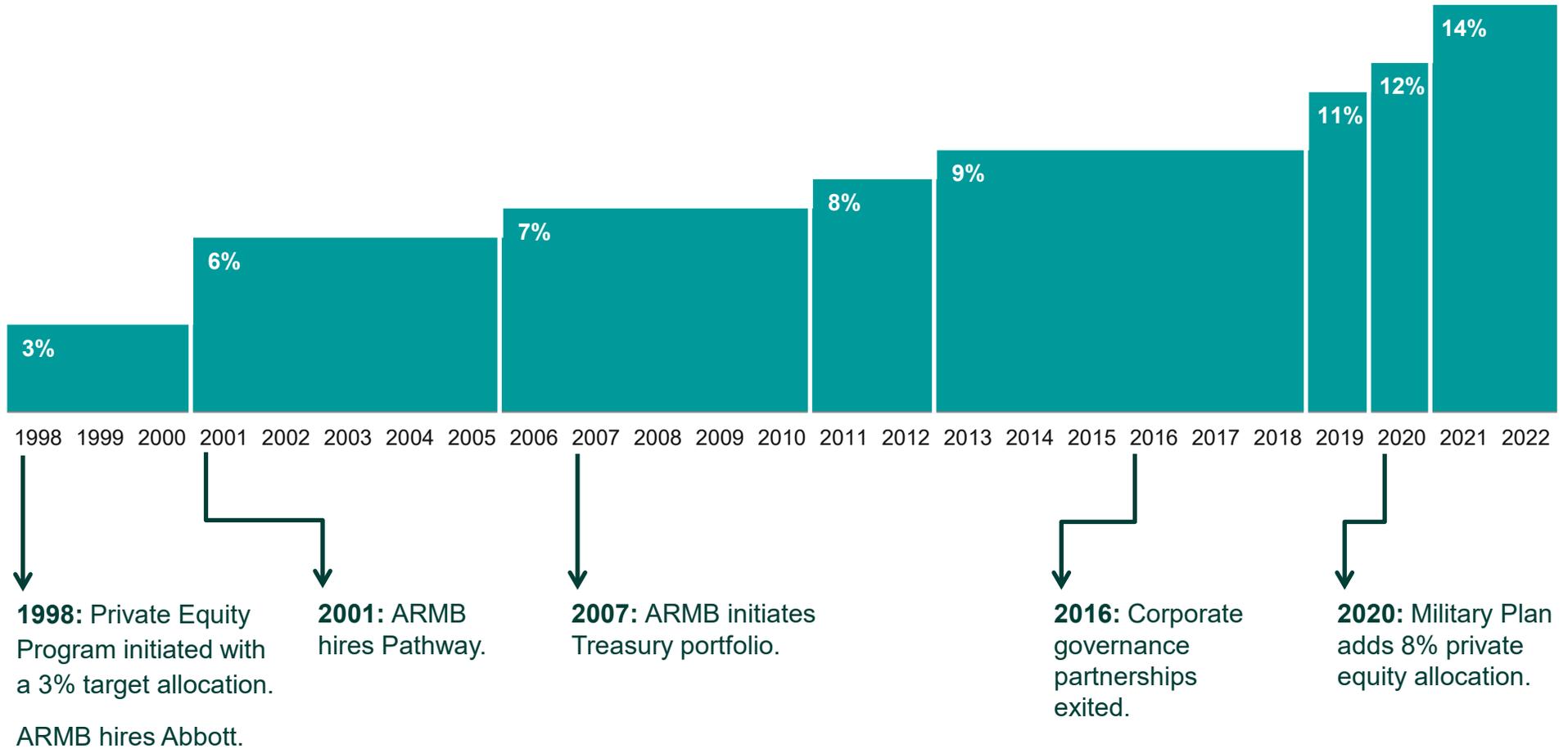
Venture Capital Pre-Money Valuations



Source: PitchBook. Both charts show the median multiple/valuation for each calendar year.

# ARMB Private Equity Program History

## ARMB Private Equity % Target



# Private Equity Program Overview

## Portfolio Overweight

- ARMB's private equity portfolio is currently overweight at 16.4%, but well within the upper band of 21%.
- As a result of the “denominator effect”, most mature private equity portfolios are currently overweight their targets.

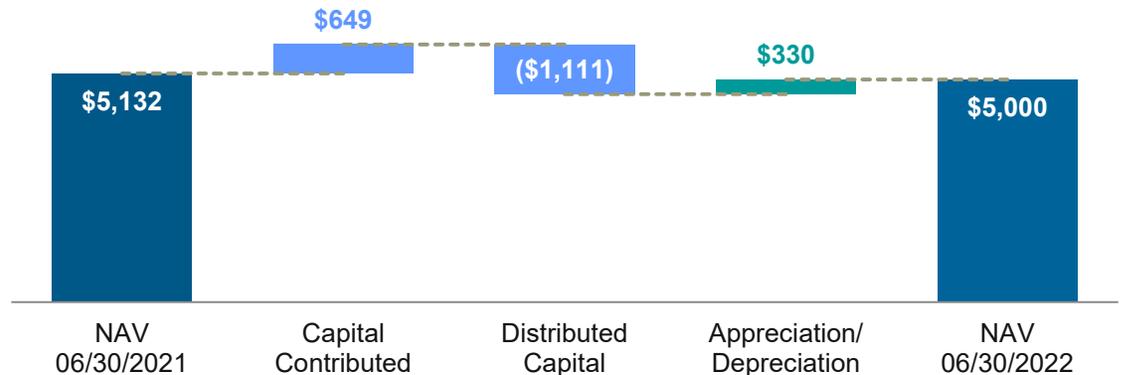
## Strong Distributions

- The ARMB portfolio received significant distributions over the last year, totaling \$1.1 billion, or 22% of beginning NAV.
- 2021 was an exceptional year for LP distributions, due to robust exit activity across the private equity industry.

## Slight Drop in NAV

- Strong distributions, combined with only a small unrealized gain, resulted in a drop in NAV by (3%).

	06/30/2021 (\$m)	% Change	06/30/2022 (\$m)
Commitments	\$7,742	9%	\$8,457
Paid-In Capital	\$6,480	10%	\$7,129
<i>% Paid-In</i>	<i>79%</i>	<i>-</i>	<i>79%</i>
Uncalled Capital	\$1,659	8%	\$1,792
Distributed Capital	\$6,855	16%	\$7,966
<b>NAV</b>	<b>\$5,132</b>	<b>(3%)</b>	<b>\$5,000</b>
<b>Total Value (NAV + Distributed)</b>	<b>\$11,987</b>	<b>8%</b>	<b>\$12,965</b>
<b>% Target</b>	<b>14.0%</b>		<b>14.0%</b>
<b>% of Plan</b>	<b>15.2%</b>		<b>16.4%</b>
+/- Target	+1.2%		+2.4%



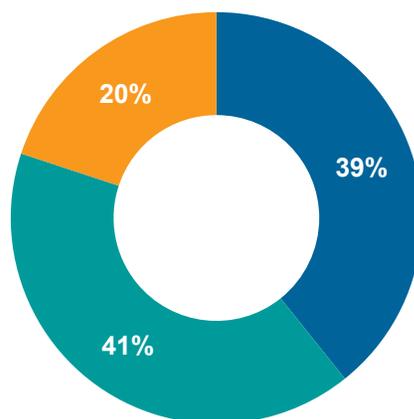
# Private Equity Program by Manager

## Exposures by Manager Remain Steady

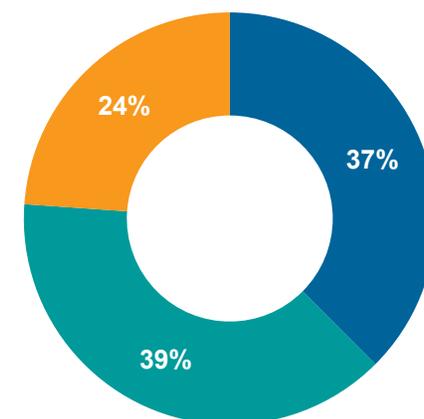
- Exposure by manager has remained consistent over time, with Abbott and Pathway each representing ~40% of the portfolio and the Treasury around 20%.
- The Treasury portfolio has been increasing its commitment levels in recent years, with new commitments now evenly split across the three managers.
- The Treasury's recent commitments have pushed up its Uncalled by 23% this year, and it now exceeds both Abbott and Pathway.

	06/30/2021 (\$m)	% Change	06/30/2022 (\$m)
Abbott NAV	\$2,004	(2%)	\$1,963
Pathway NAV	\$2,236	(9%)	\$2,040
Treasury NAV	\$892	12%	\$996
<b>Total Private Equity NAV</b>	<b>\$5,132</b>	<b>(3%)</b>	<b>\$5,000</b>
Abbott Uncalled	\$558	5%	\$584
Pathway Uncalled	\$595	(2%)	\$582
Treasury Uncalled	\$507	23%	\$626
<b>Total Private Equity Uncalled</b>	<b>\$1,659</b>	<b>8%</b>	<b>\$1,792</b>

NAV by Manager

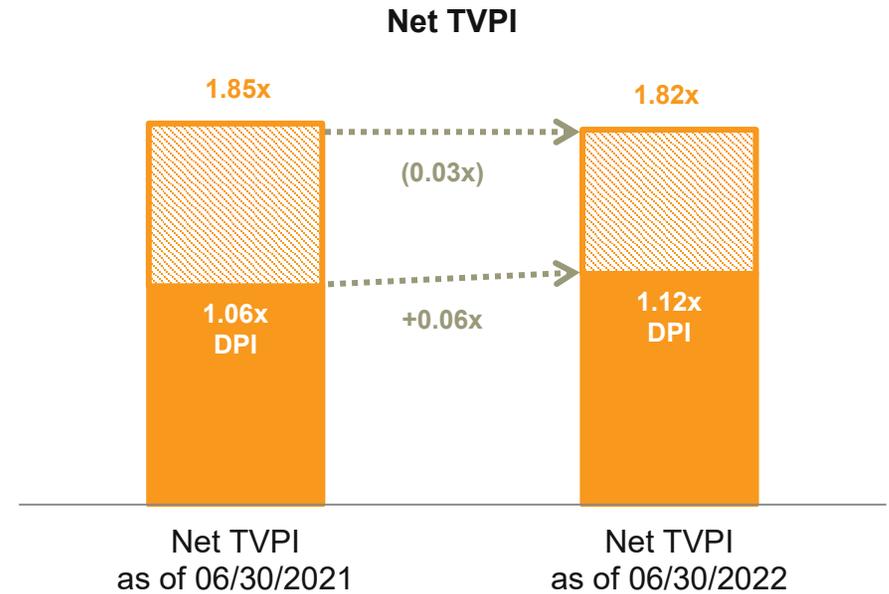
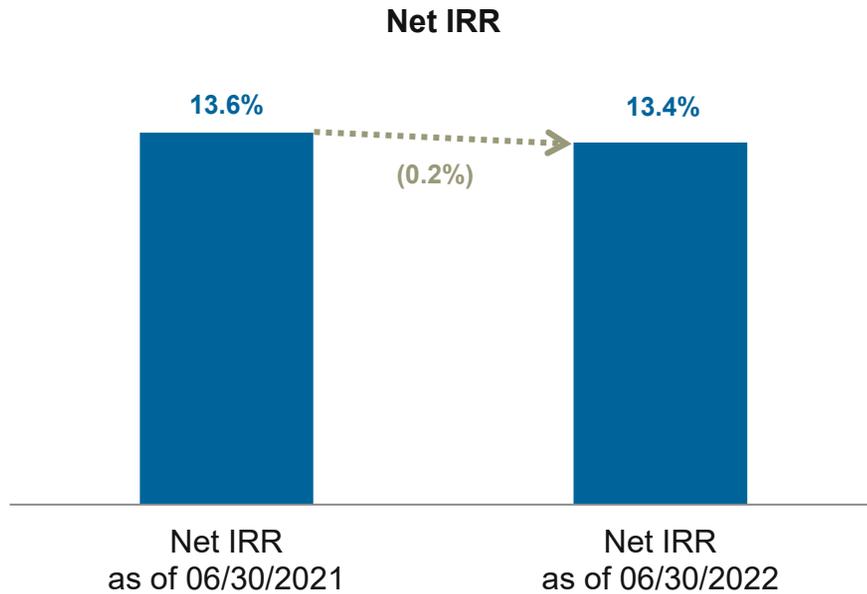


NAV + Uncalled by Manager



■ Abbott ■ Pathway ■ Treasury

# Performance



## Net IRR Nearly Flat

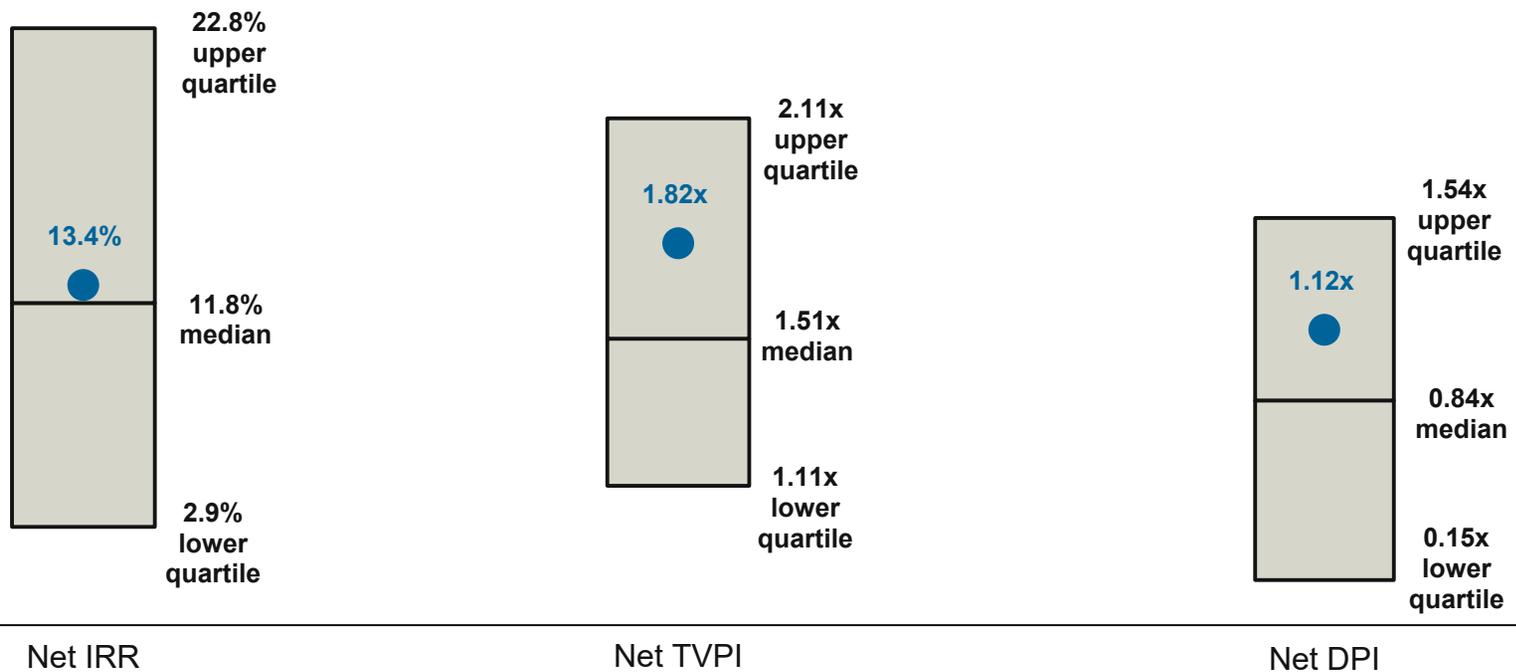
- The portfolio's Net IRR is nearly flat compared to last year, with a slight drop to 13.4%.
- Some portfolio companies have been marked down in 2022, while others have remained flat, resulting in a slight drop to overall performance.

## Uptick in Net DPI

- The portfolio experienced strong distributions this year, pushing the Net DPI up to 1.12x.
- Despite these distributions, the Net TVPI was down 1.6% to 1.82x, due to a drop in the RVPI from 0.79x to 0.70x.

DPI: Distributions divided by Paid-In Capital  
TVPI: Total Value (Distributions + NAV) divided by Paid-In Capital

# Relative Performance



## Second Quartile Performance

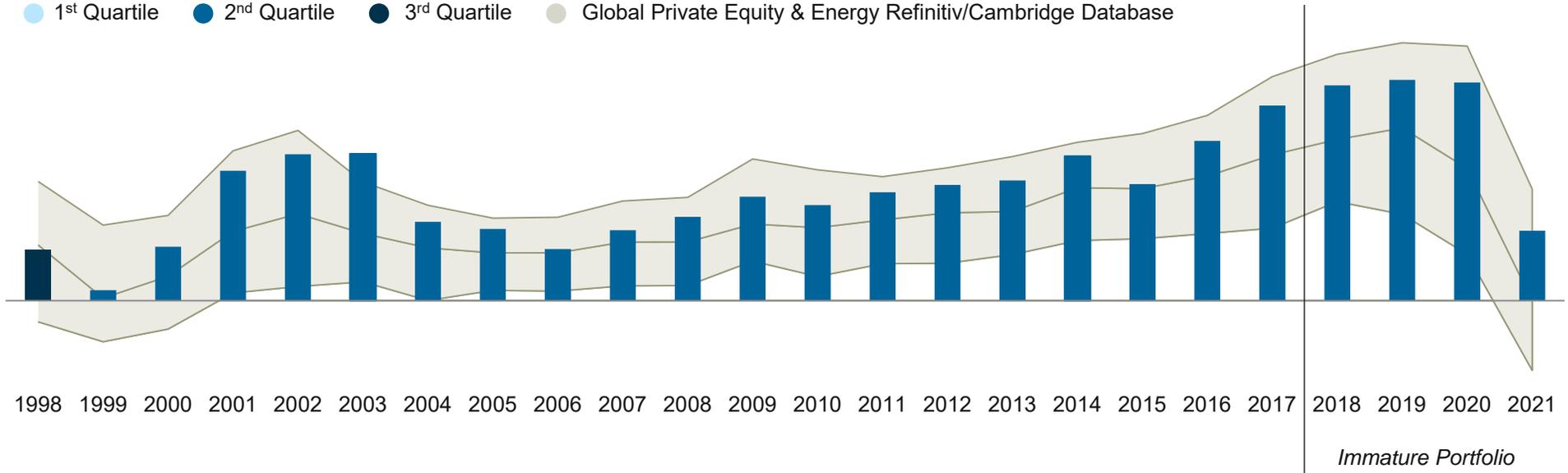
- The portfolio has generated 2<sup>nd</sup> quartile performance across all three measures, consistent with prior years.
- Given the wide dispersion of private equity returns, 2<sup>nd</sup> quartile performance is expected, and desired, for a well-diversified, mature portfolio.

As of 06/30/2022. Quartile Rankings against the Global Private Equity & Energy Refinitiv/Cambridge database.

# Performance by Vintage Year

## Net IRR by Vintage Year

● 1<sup>st</sup> Quartile   
 ● 2<sup>nd</sup> Quartile   
 ● 3<sup>rd</sup> Quartile   
 ● Global Private Equity & Energy Refinitiv/Cambridge Database



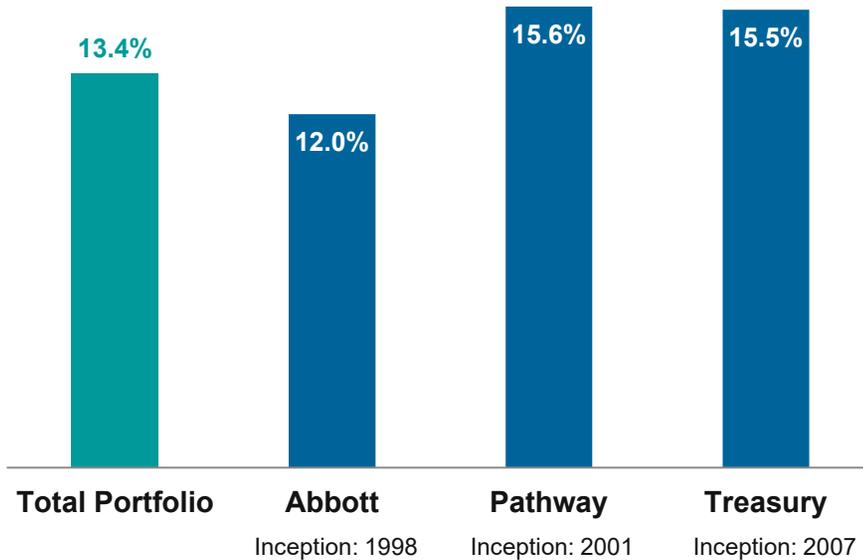
## Consistent Second Quartile Performance

- The portfolio has exhibited consistent 2<sup>nd</sup> quartile performance by vintage year. Across the last 23 vintage years, only one year (1998) has been in the 3<sup>rd</sup> quartile.
- Since 2006 (which was impacted by the 2008 financial crisis), performance has been trending positively, in line with the broader private equity market.

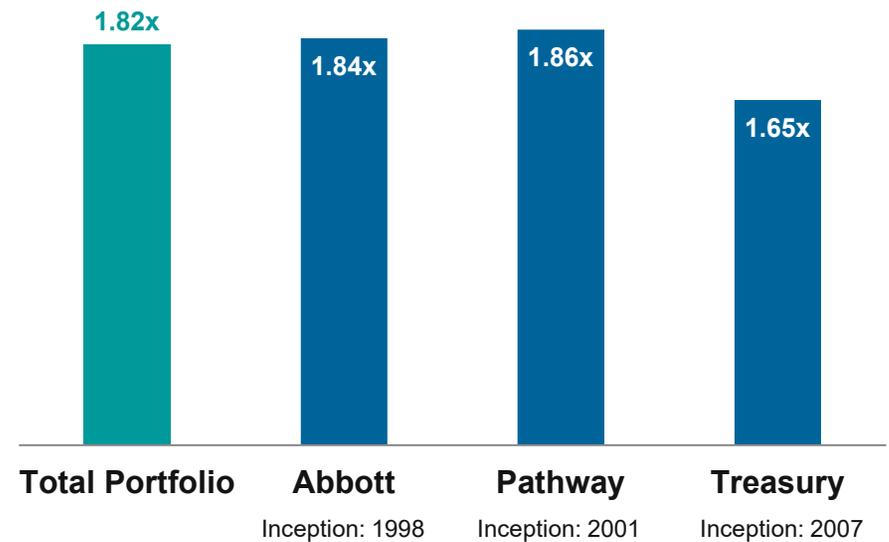
2022 has been excluded since it is not yet meaningful.

# Performance by Manager

### Net IRR



### Net TVPI



## Strong Net IRRs for Pathway & Treasury

- All three managers have generated 2<sup>nd</sup> quartile performance on a Net IRR basis.
- Pathway and the Treasury portfolio have both returned strong Net IRRs at around 16%. Abbott's Net IRR of 12% still ranks 2<sup>nd</sup> quartile, but reflects a longer time period and underperformance in the late 1990s.

## Treasury Net TVPI Still Developing

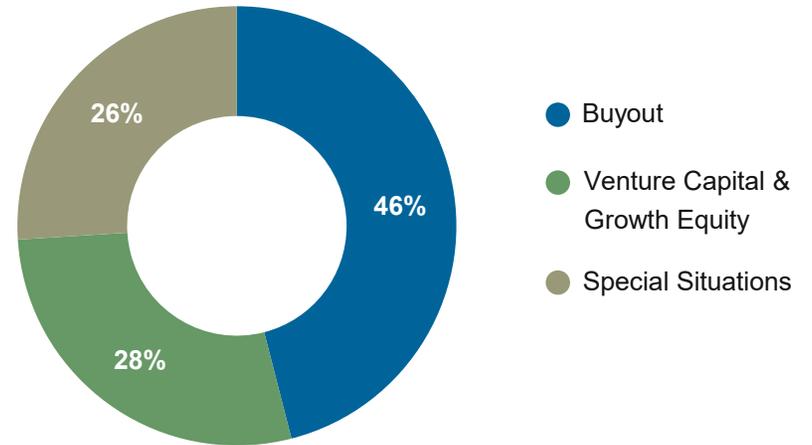
- All three managers have generated 2<sup>nd</sup> quartile performance on a Net TVPI basis.
- Abbott and Pathway have both returned similar Net TVPIs at 1.84x-1.86x. The Treasury portfolio's Net TVPI of 1.65x is still developing, given many of its commitments have been made over the last five years.

# Diversification by Strategy

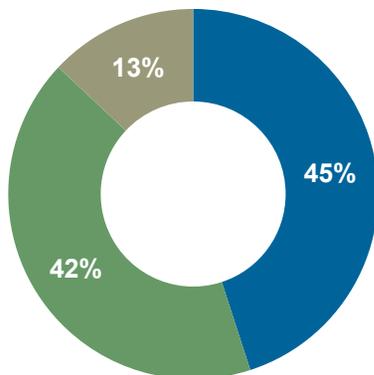
## Well-Diversified by Strategy Type

- The portfolio is tilted towards buyouts, with the other half of the portfolio split between Venture Capital/Growth Equity and Special Situations.
- Compared to Pathway, Abbott has higher exposures to venture capital and growth equity. As a result, their buyout and special situations exposures are slightly lower.
- The Treasury portfolio primarily consists of special situations, which includes secondaries, distressed, energy, and diversified growth-oriented strategies, among others. The portfolio made its first venture capital commitment in 2022.

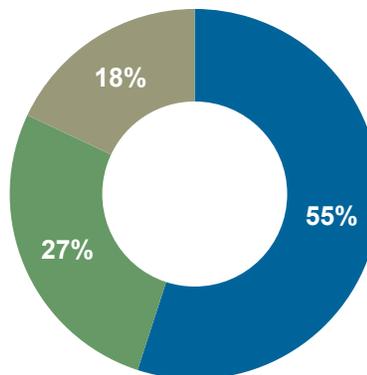
Total Portfolio



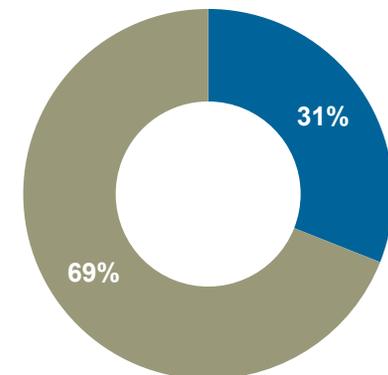
Abbott



Pathway



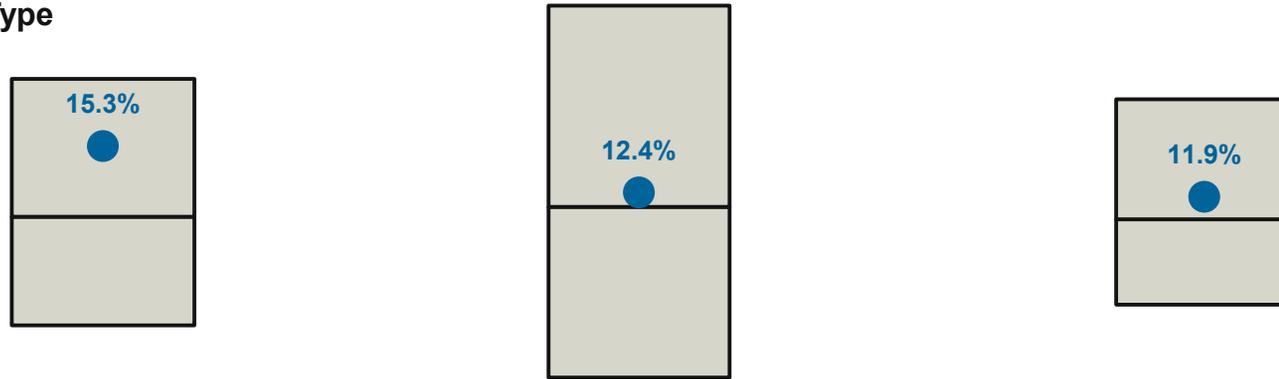
Treasury



As of 06/30/2022. Strategy diversification based on underlying partnerships, shown as a % of NAV.

# Performance by Strategy

## Net IRRs by Strategy Type



	Buyout	Venture Capital	Special Situations
<b>Abbott</b>	14.0%	10.8%	11.2%
<b>Pathway</b>	16.6%	16.7%	12.1%
<b>Treasury</b>	22.3%	-	13.9%
<b>Total Portfolio</b>	15.3%	12.4%	11.9%

- The total portfolio has generated 2<sup>nd</sup> quartile performance for each strategy type.
- Buyouts have generated the strongest performance with a 15% Net IRR, with Venture Capital/Growth Equity and Special Situations both around 12% Net IRRs.
- The Treasury portfolio has generated the strongest Net IRRs within both Buyouts and Special Situations. Within Venture Capital/Growth Equity, Pathway’s performance has exceeded Abbott.

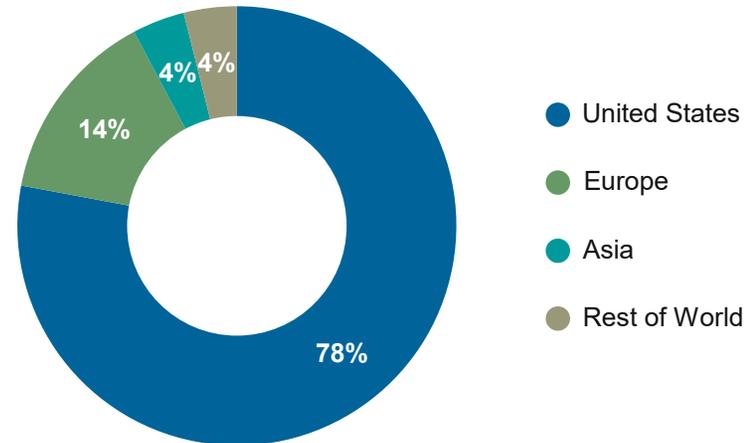
As of 06/30/2022. Quartile rankings against the Global Refinitiv/Cambridge database customized for each strategy type. Special Situations includes Mezzanine, Credit Opportunities, Private Energy, and Secondaries.

# Diversification by Geography

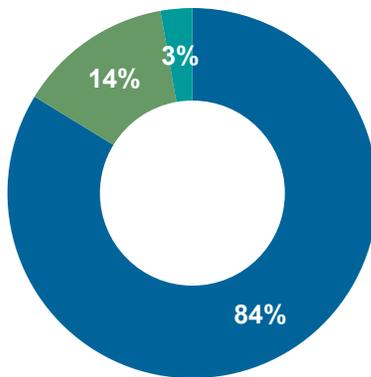
## Concentration in U.S. Strategies

- The program is heavily weighted towards U.S. strategies, which make up 78% of the total portfolio. Such a high U.S. exposure has likely benefitted performance, given U.S. strategies have outperformed all other regions over the last 10 years.
- Compared to Abbott, Pathway has a heavier tilt towards international strategies, representing 28% of their portfolio.
- The Treasury portfolio has some international exposure as well, and is broadly in line with Abbott and Pathway.

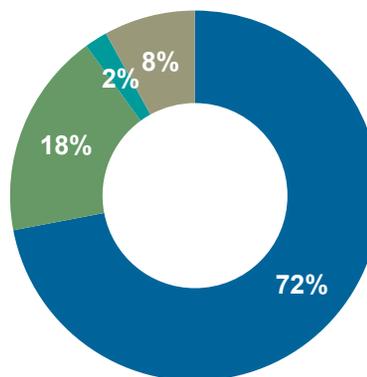
Total Portfolio



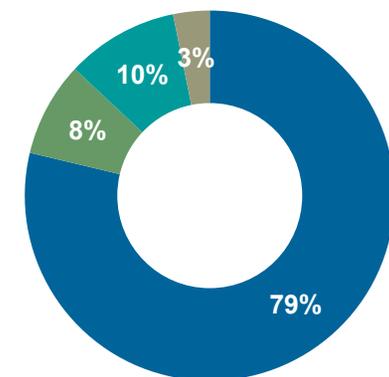
Abbott



Pathway



Treasury



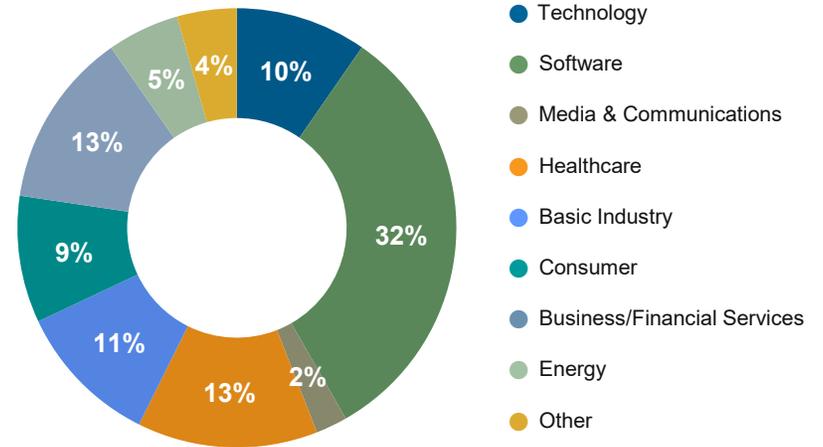
As of 06/30/2022. Geographic diversification based on underlying portfolio companies, shown as a % of NAV.

# Diversification by Industry

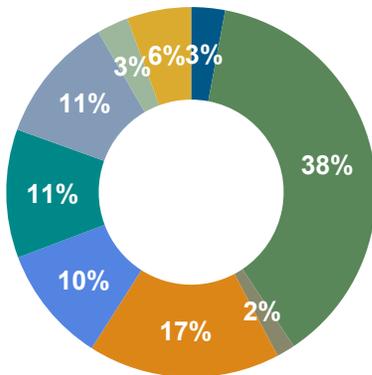
## Well-Diversified by Industry with Healthy TMT Exposure

- The portfolio is well diversified by industry, with a tilt towards TMT (Technology, Software and Media & Communications). At 44% of the portfolio, the TMT exposure is consistent with other large private equity programs, but nevertheless, may require a thoughtful approach to future commitments.
- After TMT, the portfolio is split between Healthcare, Basic Industry, Consumer and Business/Financial Services.
- Pathway has a larger TMT exposure, while Abbott has larger exposures to Healthcare and Consumer. The Treasury portfolio is the most diversified by sector, with TMT representing only 25% of the portfolio.

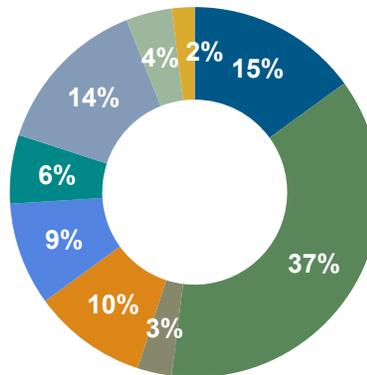
Total Portfolio



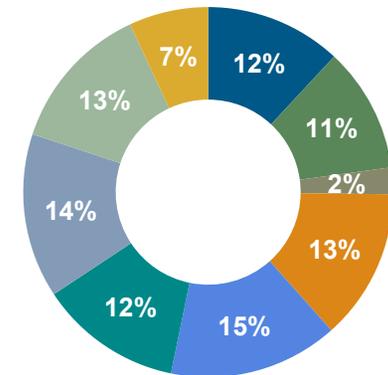
Abbott



Pathway



Treasury



As of 06/30/2022. Industry diversification based on underlying portfolio companies, shown as a % of NAV.

# Abbott Capital Management - Profile

Year Founded	Headquarters	Additional Office(s)	Ownership	# Employees	# Investment Professionals
1986	New York City	London	Employee-Owned	60	21

## Overview

- Abbott is a boutique fund-of-funds manager, with a longstanding client base across their commingled funds and separate accounts.
- Abbott constructs highly diversified portfolios across buyouts, venture capital and growth equity. In particular, the Firm has strong relationships in venture capital and European buyouts. Their portfolios also have small exposures to secondaries and co-investments.
- Abbott has been managing a private equity separate account for ARMB since 1998. ARMB represents 17% of their AUM, making ARMB an important client for the Firm.
- Compared to Pathway, Abbott is a smaller firm with stronger venture capital relationships, but more limited exposure to international strategies and co-investments.

## Organization/Team Updates

- Abbott has experienced multiple recent retirements, each with a long runway. Abbott has added staff to compensate for the departures, and the total number of employees has increased from 57 to 60 over the last year.
  - Jonathan Roth, President, announced his retirement in 2021, and will remain a Senior Advisor through 2023. Len Pangburn, a long-time Managing Director, was selected by the partners as the succeeding President.
  - The Head of Secondary Investing retired in 2019, and the COO retired in 2020.

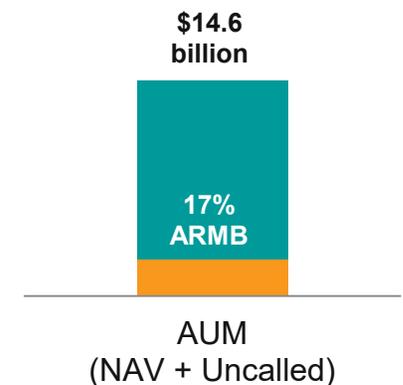
## Callan Moodlight

### Performance

● Within Expectations

### Organization

● Within Expectations



Callan Moodlight Legend: ● Within Expectations ● Notable ● Cautionary

# Abbott Performance & Portfolio Construction

Vintage Years	# Partnerships*	# Active Partnerships*	Committed	Paid-in	% Paid-In	Unfunded	Distributions	NAV	Total Value
1998-2022	324	244	\$3,549	\$3,070	87%	\$584	\$3,679	\$1,963	\$5,642

## Overview

- Since 1998, Abbott has invested over \$3.5 billion into 324 partnerships. The portfolio is mature and well-diversified.
- Abbott has generated 2<sup>nd</sup> quartile performance across all measures. The Net IRR dropped below median in 2021, but recovered in 2022.
- Abbott's net cash flow has been positive this year, with distributions exceeding capital calls.

Net TVPI	Quartile Ranking
1.84x	2 <sup>nd</sup>

Net IRR	Quartile Ranking
11.99%	2 <sup>nd</sup>

## Portfolio Construction

- Over the last five years, Abbott's average commitment size has been \$10.5 million, across an average of 20 partnerships/investments per year.
- Their recent commitments have tilted towards large and mid buyouts followed by venture capital, with minimal exposure to small buyouts and growth equity. Their last energy commitment was made in 2015, and they have not invested in credit-oriented or distressed funds in the last 10 years.
- Abbott also invests in secondaries and co-investments, but these only make up 6% of recent commitments.

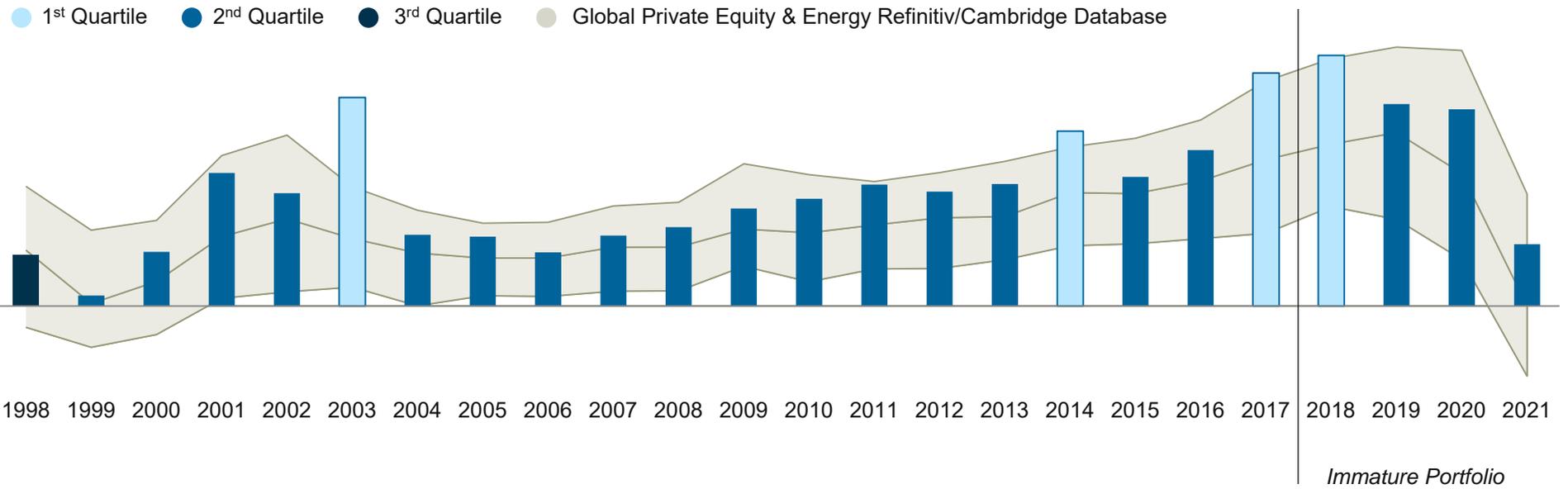
Net DPI	Quartile Ranking
1.20x	2 <sup>nd</sup>

\*Includes co-investments and secondaries.

Quartile rankings against the Global Private Equity & Energy Refinitiv/Cambridge database.

# Abbott Performance by Vintage Year

## Net IRR by Vintage Year



- Abbott's performance by vintage year has been consistently 2<sup>nd</sup> quartile. Over the last 23 vintage years, four years have been in the 1<sup>st</sup> quartile and one (1998) in the 3<sup>rd</sup> quartile.
- Abbott experienced a slow start when initial investing the portfolio in the late 1990s, and a second stall during the 2008 financial crisis, but performance has been trending upwards with each successive year thereafter.

2022 has been excluded since it is not yet meaningful.

# Pathway Capital Management - Profile

Year Founded	Headquarters	Additional Office(s)	Ownership	# Employees	# Investment Professionals
1991	Irvine, CA	Providence, RI, London, Hong Kong & Tokyo	Employee-Owned	219	74

## Overview

- Pathway is a large fund-of-funds manager, with a longstanding client base across their commingled funds and separate accounts.
- Pathway constructs highly diversified portfolios across buyouts, venture capital, growth equity, distressed, and credit-oriented strategies. In particular, they have expertise in co-investments as well as international strategies.
- Pathway has been managing a separate account for ARMB since 2001. As Pathway is a larger firm, ARMB only represents 2% of their AUM.
- Compared to Abbott, Pathway is a larger firm with a global presence. They have more experience with co-investments, but fewer venture capital relationships.

## Organization/Team Updates

- Pathway recently promoted two professionals to Partner, thereby expanding the partnership from 21 to 23 members. They also expanded the Investment Committee to 12 members.
- While there were no other changes to the senior team, they removed the Co-CIO titles. This change did not affect the roles or responsibilities of these professionals, as the Firm operates as an equal partnership.
- The CFO will be retiring in 2023, and his duties will be split across two existing professionals.

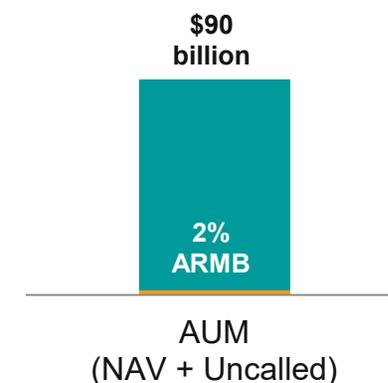
## Callan Moodlight

### Performance

● Within Expectations

### Organization

● Within Expectations



Callan Moodlight Legend: ● Within Expectations ● Notable ● Cautionary

# Pathway Performance & Portfolio Construction

Vintage Years	# Partnerships*	# Active Partnerships*	Committed	Paid-in	% Paid-In	Unfunded	Distributions	NAV	Total Value
2001-2022	359	311	\$3,279	\$2,932	89%	\$582	\$3,425	\$2,040	\$5,465

## Overview

- Since 2001, Pathway has invested nearly \$3 billion in 359 partnerships/investments. The portfolio is mature and well-diversified.
- Pathway has generated 2<sup>nd</sup> quartile across all measures.
- Pathway's net cash flow has been positive this year, with distributions exceeding capital calls.

**Net TVPI**      **Quartile Ranking**

1.86x      2<sup>nd</sup>

**Net IRR**      **Quartile Ranking**

15.64%      2<sup>nd</sup>

**Net DPI**      **Quartile Ranking**

1.17x      2<sup>nd</sup>

## Portfolio Construction

- Over the last five years, Pathway's average commitment size has been \$6.7 million, across an average of 31 partnerships/investments per year. Excluding co-investments and secondaries, their average commitment size increases to \$9.7 million.
- Their recent commitments have tilted towards large buyouts, followed by mid buyouts and venture capital. Small buyouts and growth equity make up smaller percentages of the portfolio. Pathway has also invested small amounts in distressed, credit-oriented and private energy strategies, but will no longer be pursuing these going forward.
- Co-investments and secondaries make up a relatively significant portion of the portfolio, representing over 15% of recent commitments.

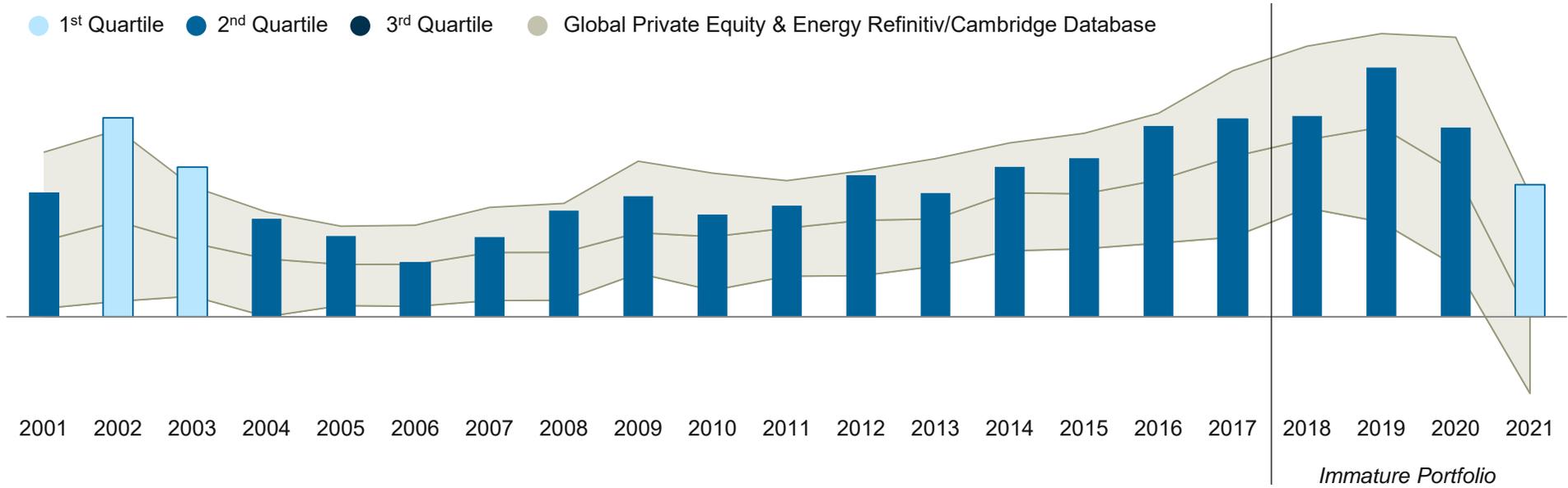
\*Includes co-investments and secondaries.

Quartile rankings against the Global Private Equity & Energy Refinitiv/Cambridge database.

# Pathway Performance by Vintage Year

## Net IRR by Vintage Year

● 1<sup>st</sup> Quartile 
 ● 2<sup>nd</sup> Quartile 
 ● 3<sup>rd</sup> Quartile 
 ● Global Private Equity & Energy Refinitiv/Cambridge Database



- Pathway has generated consistent 2<sup>nd</sup> quartile performance by vintage year, with three of the last 21 vintage years in the 1<sup>st</sup> quartile and none in the 3<sup>rd</sup> quartile.
- Pathway’s performance experienced a strong start in the early 2000s, before dropping just before the 2008 financial crisis. Since 2006, performance has generally trended positively with each successive vintage year.

2022 has been excluded since it is not yet meaningful.

# Treasury Performance & Portfolio Construction

Vintage Years	Total # of Partnerships	# of Active Partnerships	Committed	Paid-in	% Paid-In	Unfunded	Distributions	NAV	Total Value
2007-2022	37	36	\$1,630	\$1,127	89%	\$626	\$862	\$996	\$1,858

## Overview

- Since 2007, the Treasury portfolio has invested \$1.1 billion across 37 partnerships.
- The Treasury portfolio has generated 2<sup>nd</sup> quartile across all measures.
- The portfolio experienced negative net cash flow this year, with capital calls exceeding distributions. The portfolio continues to mature, as 46% of commitments have been made in the last five years.

Net TVPI	Quartile Ranking
----------	------------------

1.65x	2 <sup>nd</sup>
-------	-----------------

Net IRR	Quartile Ranking
---------	------------------

15.54%	2 <sup>nd</sup>
--------	-----------------

## Portfolio Construction

- Over the last five years, the Treasury portfolio's average commitment size has been \$43 million, across an average of 3.4 partnerships per year. The portfolio is significantly more concentrated than Abbott and Pathway.
- Recent commitments have focused on blue chip managers, particularly within large buyouts as well as growth-oriented strategies. The portfolio made its first venture capital commitment in 2022. 70% of these recent commitments have doubled down on Abbott and Pathway's investments.
- Although the Treasury portfolio invests in secondary fund-of-funds and GP stakes funds, it has not made any direct secondary investments or co-investments.

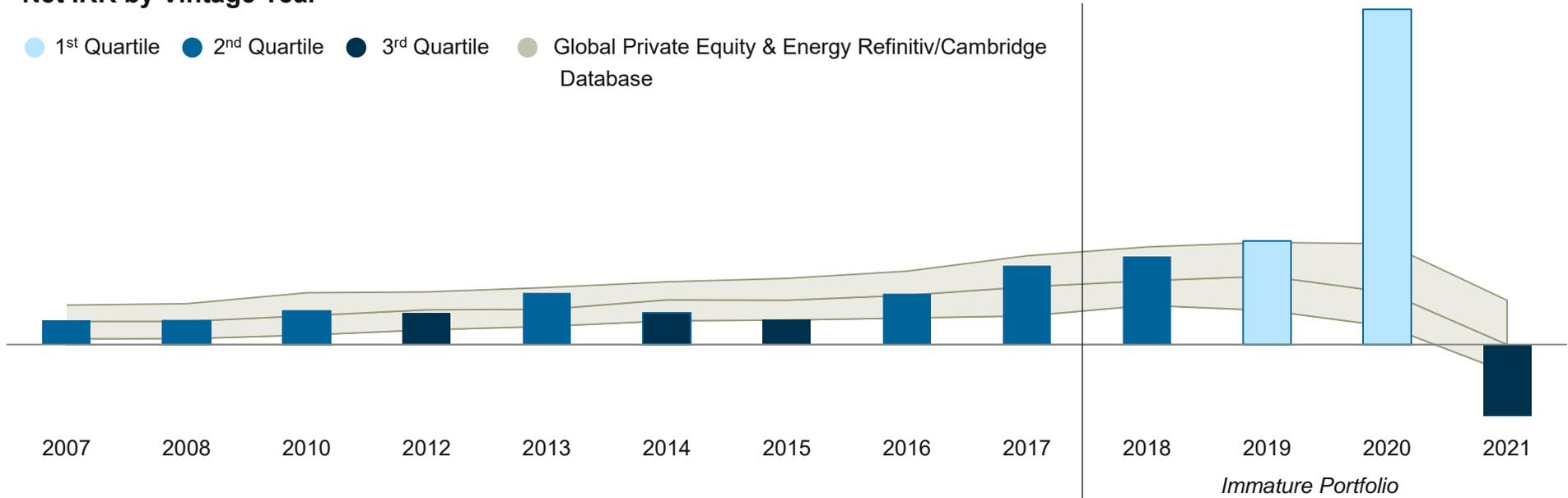
Net DPI	Quartile Ranking
---------	------------------

0.77x	2 <sup>nd</sup>
-------	-----------------

Quartile rankings against the Global Private Equity & Energy Refinitiv/Cambridge database.

# Treasury Performance by Vintage Year

## Net IRR by Vintage Year



- The Treasury portfolio has experienced greater volatility in its performance by vintage year than Abbott and Pathway, given the portfolio is significantly more concentrated with fewer commitments made per year.
- It has exhibited a mix of quartile rankings by vintage year, yet the relative performance of recent vintages has been strengthening. Many early vintage years represented only 1-2 partnerships, with each therefore having a large impact on performance. The Treasury portfolio's commitment levels have increased in recent years, leading to more commitments per year and greater diversification.
- Note: 2020 and 2021 performance is still immature, and the net IRRs are expected to normalize over the next couple years.

2022 has been excluded since it is not yet meaningful.

## Summary & Observations

### Mature Portfolio

- ARMB manages a large, mature private equity program with a successful 24-year history.
- As is the case with many mature private equity programs, ARMB's portfolio is current overweight its target given the "denominator effect".

### Strong Performance

- The portfolio has generated consistent 2<sup>nd</sup> quartile performance on a Net IRR, Net TVPI, and Net DPI basis as of 06/30/2022.
- All three managers have been positive contributors to performance.

### Well Diversified

- The program is highly diversified across 620 unique partnerships, secondaries and co-investments.
- The portfolio primarily consists of blue chip managers spanning a variety of strategy types, industries and, to a lesser extent, geographies.

### Strong Distributions

- The portfolio generated strong distributions last year, due to strong exit activity in the private equity industry.
- As a result, the portfolio's net cash flow was positive for the year.

### Looking Ahead...

- Throughout a market downturn, private equity returns are typically smoothed compared to the public markets. As a result, the "denominator effect" may continue to be impactful to the program and necessitate a more conservative approach to future commitments.
- Both distributions and contributions are expected to revert back to normal after 2021's peak, impacting both the cash inflows and outflows for the program.

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## Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.

# Abbott Capital Management, LLC

**Mandate:** Private Equity

**Hired:** 1998

Firm Information	Investment Approach	Total ARMB Mandate
<p>Abbott is a leading independent investment management firm founded in 1986. Abbott focuses exclusively on private equity by making primary commitments, secondaries, and co-investments for both Abbott sponsored commingled funds, and separate account clients in professionally managed venture capital, growth equity, buyout, and special situations funds. Since inception, Abbott has committed more than \$24 billion to more than 600 private equity investments on behalf of its clients, and currently manages over \$14 billion in assets.</p> <p>Abbott is registered as an investment advisor with the SEC in the United States and its UK subsidiary is authorized and regulated by the FCA. The firm has offices in New York and London.</p> <p>As of 11/15/22, Abbott has 57 employees, including 19 investment professionals.</p> <p><b>Key Executives:</b>                      Young Lee, Managing Director                      Leonard Pangburn, Managing Director                      Matthew Smith, Managing Director</p>	<p>Abbott employs a collaborative approach to investing and managing portfolios. This team approach ensures that investment discussions benefit from the broad range of backgrounds and experiences of the members of the investment team, as well as from the investment management disciplines the firm has developed over the last three decades of managing private equity assets.</p> <p>Abbott's investment process is multi-stepped and disciplined. Investment decisions are made through an iterative process of review, analysis, and further review designed to meet the standards of Abbott's investment team. Fundamentally, Abbott evaluates general partners based on its views of:</p> <p>The quality of the team, including:</p> <ul style="list-style-type: none"> <li>• Proven ability to work cohesively</li> <li>• Past investment success</li> <li>• Individual and joint reputations, including for acting with integrity and honesty</li> </ul> <p>The quality of the prior track record, including:</p> <ul style="list-style-type: none"> <li>• Absolute and relative performance</li> <li>• Relevance to the current strategy</li> <li>• Repeatability</li> <li>• Involvement of present team members in that record</li> </ul> <p>The team's ability to be successful in the future, given:</p> <ul style="list-style-type: none"> <li>• Strategy</li> <li>• Experience</li> <li>• Motivation</li> </ul> <p><b>Benchmark:</b> 1/3 S&amp;P 500, 1/3 Russell 2000, 1/3 MSCI EAFE +200 basis points and the Cambridge vintage year peer comparison.</p>	<p><b>Assets Under Management: (6/30/22)</b>                      Market Value: \$2.0 billion</p>

**Concerns:** None

## Performance

The since inception internal rate of return (IRR) for ARMB's Abbott portfolio is 12.0% through 6/30/22, which compares favorably against the public market equivalent return of ARMB's blended benchmark (1/3 S&P 500, 1/3 Russell 2000, 1/3 MSCI EAFE) of 7.3%.

ARMB's portfolio managed by Abbott has outperformed the Cambridge median with four vintage years in the top quartile, 17 in the second quartile, and one in the third quartile when compared against the Cambridge database for vintage years 1998-2019.

ABBOTT CAPITAL

# ALASKA RETIREMENT MANAGEMENT BOARD

DECEMBER 2022

# ABBOTT CAPITAL OVERVIEW

# ABOUT ABBOTT

Founded in 1986, Abbott is a multi-strategy private equity firm with approximately \$14+ billion in assets under management. Our global platform spans the private equity, growth equity, and venture capital markets with solutions for a diverse investor base comprised of public, corporate, and multi-employer pension plans, foundations, endowments, family offices, and high net worth individuals.

Since inception, Abbott has committed more than \$24 billion to more than 600 primary, secondary, and co-investments on behalf of its clients.

**1986**  
Abbott  
Founded

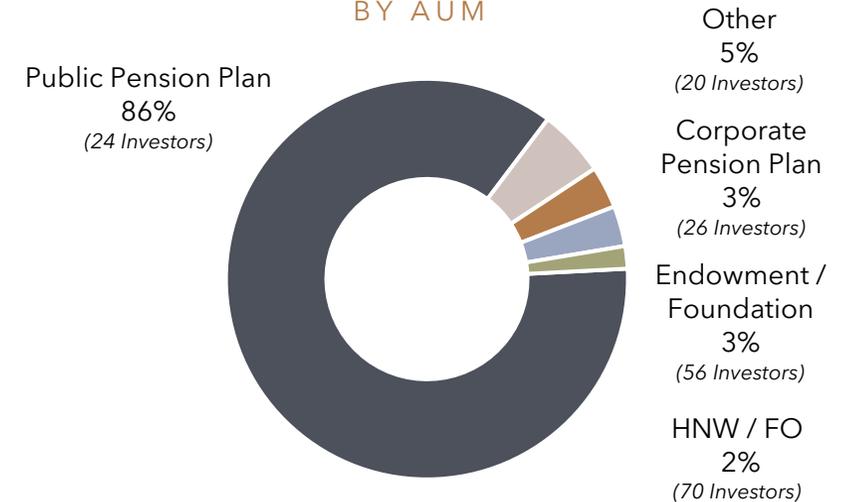
**100%**  
Independent and  
Employee- Owned

**\$14B+**  
Assets Under  
Management

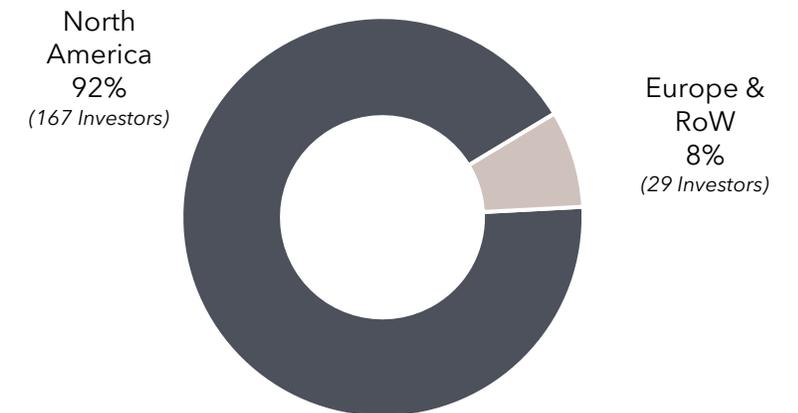
**10,000+**  
Funds  
Tracked

**2015**  
UN PRI  
Signatory

## INVESTORS BY TYPE BY AUM



## INVESTORS BY GEOGRAPHY BY AUM



AUM as of Dec 31 2021. AUM does not reflect Abbott's reported RAUM due to the inclusion of liabilities and approximately \$850M of non-discretionary assets for which Abbott provides ongoing investment monitoring and reporting but does not provide continuous and regular supervisory or management services.

# PRIVATE EQUITY PLATFORM

\$24B+

COMMITMENTS  
SINCE INCEPTION

\$1B+

AVG CAPITAL  
DEPLOYED  
ANNUALLY

3 YEARS ENDING DEC 31 2021

160+

MANAGER  
RELATIONSHIPS

AS OF DEC 31 2021

150+

LPAC  
SEATS

AS OF DEC 31 2021

# PRIVATE EQUITY SOLUTIONS

## SEPARATELY MANAGED ACCOUNTS

**CUSTOMIZED PORTFOLIOS**  
built to meet client-specific  
investment goals

**ACCESS** to sector-focused,  
emerging, & diverse  
managers

**PERSONALIZED REPORTING**  
and administrative support

---

## SECONDARIES & CO-INVESTMENTS

**DEDICATED FUNDS** for  
each strategy

**SECONDARIES** include  
GP-led, asset carve-outs,  
fund purchases

**CO-INVESTMENTS** with  
both new and existing  
Abbott GPs -- direct  
deals and SPVs

---

## FLEXIBLE FUND SOLUTIONS

**DIVERSIFIED FUNDS**  
with flexible strategy  
allocations

**TARGETED** geographic  
and sector exposures

**SINGLE AND MULTI-  
ASSET EXPOSURE**  
through secondaries and  
co-investments

---

## OPERATIONS & ADMINISTRATION

**BACK-OFFICE SOLUTIONS** built to ease in-house reporting and data management for LPs

**PERFORMANCE REPORTING** including analytics and benchmarking

# ABBOTT TEAM

## INVESTMENT COMMITTEE



LEONARD PANGBURN  
Managing Director,  
Co-President  
*Joined 2005*



JONATHAN ROTH  
Managing Director,  
Co-President  
*Joined 1992*



MEREDITH RERISI  
Managing Director  
*Joined 1998*



MATTHEW SMITH  
Managing Director  
*Joined 2000*



TIM MALONEY  
Managing Director  
*Joined 2004*



YOUNG LEE  
Managing Director  
*Joined 2007*



JOBST KLEMME\*  
Managing Director  
*Joined 2015*



JONATHAN TUBIANA  
Principal  
*Joined 2009*



WOLF WITT  
Principal  
*Joined 2018*

## INVESTMENT TEAM



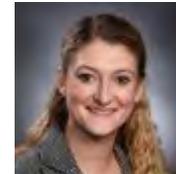
ARIANNA MERRILL  
Vice President



MORITZ TURCK\*  
Vice President



DECLAN FEELEY  
Senior Associate



AMY CAPORALE  
Associate



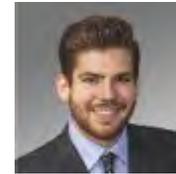
WILLIAM CRENSHAW  
Associate



ALEXIS MAIDA  
Associate



TAYLOR MCGINNIS  
Associate



LUIS DELGADO  
Analyst



KATE HOLZER  
Analyst



JEREMIAH YONDAH  
Analyst

## SECONDARIES TEAM



# ABBOTT TEAM

## OPERATIONS, FINANCE & LEGAL / COMPLIANCE



MARY T. HORNBY  
Managing Director,  
General Counsel & CCO  
*Joined 2004*



LAUREN MASSEY  
Managing Director,  
Chief Administrative Officer  
*Joined 1995*



PAOLO PARZIALE  
Managing Director,  
Chief Financial Officer  
*Joined 2002*



JOE JULIANO  
Director,  
Investment Operations



JENNIFER LAGNADO  
Director,  
Corporate Operations



PUTRI KAFRAWI  
Senior Manager,  
Fund Administration

## CLIENT SOLUTIONS & INVESTOR RELATIONS



SAMANTHA HEWITT  
Director,  
Investor Relations



SEAN P. LONG  
Director,  
Marketing & Client  
Solutions



VALENTINE WHITTAKER  
Vice President,  
Marketing & Client  
Solutions

50+ people dedicated to private equity

Managing Directors with deep private equity investment experience

Relationship and information advantages across the private equity ecosystem

# PORTFOLIO REVIEW

# ARMB ACTIVE & LIQUIDATED PORTFOLIO SNAPSHOT

AS OF JUN 30 2022

	<b>Commitment</b>	<b>Amount Paid-in</b>	<b>Total Distributions / Realizations</b>	<b>Valuation</b>	<b>Total Value</b>	<b>TVPI</b>	<b>IRR</b>
<b>ACTIVE PORTFOLIO FUNDS:</b>							
Venture Capital & Growth Equity	\$868,505,000	\$779,696,029	\$965,099,503	\$790,595,778	\$1,755,695,281	2.25	12.58%
Buyouts & Special Situations	\$1,920,832,729	\$1,551,919,256	\$1,635,881,946	\$1,089,898,196	\$2,725,780,142	1.76	15.73%
Secondary Transactions	\$39,426,909	\$37,173,898	\$39,219,555	\$26,552,140	\$65,771,695	1.77	19.32%
Co-Investments	\$54,119,487	\$49,409,474	\$11,894,811	\$54,716,295	\$66,611,106	1.35	17.49%
<b>Total Active Portfolio Funds</b>	<b>\$2,882,884,125</b>	<b>\$2,418,198,656</b>	<b>\$2,652,095,815</b>	<b>\$1,961,762,409</b>	<b>\$4,613,858,224</b>	<b>1.91</b>	<b>14.17%</b>
<b>LIQUIDATED PORTFOLIO FUNDS:</b>							
Venture Capital & Growth Equity	\$164,422,219	\$159,681,800	\$233,084,557	-	\$233,084,557	1.46	6.15%
Buyouts & Special Situations	\$489,895,100	\$481,640,508	\$786,769,860	-	\$786,769,860	1.63	10.04%
Secondary Transactions	\$11,390,346	\$10,841,288	\$25,231,407	-	\$25,231,407	2.33	26.93%
<b>Total Liquidated Portfolio Funds</b>	<b>\$665,707,665</b>	<b>\$652,163,595</b>	<b>\$1,045,085,824</b>	<b>-</b>	<b>\$1,045,085,824</b>	<b>1.60</b>	<b>9.19%</b>
<b>Total Distributed Stock Activity and Other Income</b>			(\$18,298,861)	\$950,874	(\$17,347,987)		
<b>Total ARMB Portfolio</b>	<b>\$3,548,591,790</b>	<b>\$3,070,362,252</b>	<b>\$3,678,882,778</b>	<b>\$1,962,713,283</b>	<b>\$5,641,596,061</b>	<b>1.84</b>	<b>11.99%</b>

Active and Liquidated Portfolio IRR and TVPI are shown gross of investment management fees charged by Abbott, and gross of gains and losses realized upon the sale of distributed stock, including brokerage and other related commissions. Total ARMB Portfolio IRR and TVPI are shown gross of investment management fees charged by Abbott and are net of gains and losses realized upon the sale of distributed stock, including brokerage and other related commissions.

Past performance is not a guide to future results and is not indicative of expected realized returns. See Important Information pages herein including [Abbott and Portfolio Investment Performance Information](#).

# ARMB COMMITMENT ACTIVITY



## CONSISTENT, STEADY PACE OF COMMITMENTS

- Level-headed, rational approach to deployment
- High conviction manager selection

YTD information provided as of Oct 31 2022.

Amounts committed in a currency other than USD (if any) have been converted to USD using the applicable exchange rate on the date of closing.

# ARMB PORTFOLIO FUND CASH FLOWS

## CONTINUED STRONG LIQUIDITY

- \$1.1 billion of capital called since 2017, \$1.6 billion returned to ARMB
- Cash flow positive by more than \$450 million since 2017



As of Jun 30 2022. Distributions exclude gains and losses realized on the sale of distributed stock, including brokerage and other related commissions. No assurances can be given that cash flows will continue at this pace in the future.

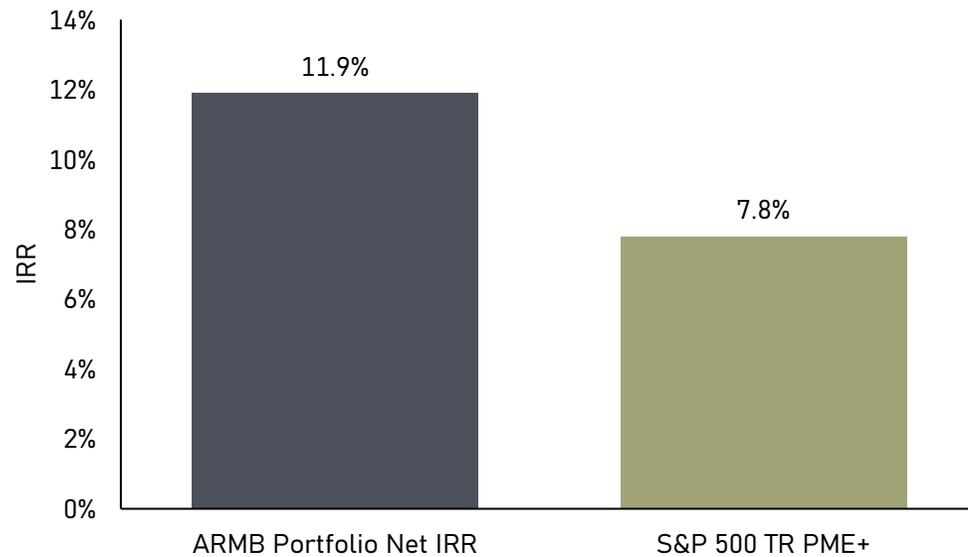
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# ARMB NET PERFORMANCE

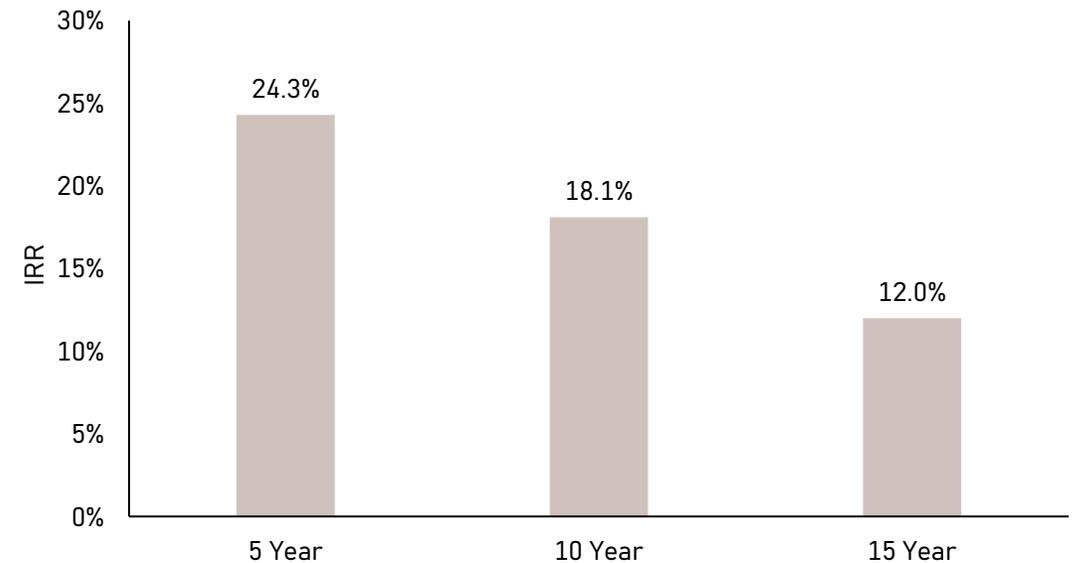
## POOLED IRR & PUBLIC MARKET EQUIVALENT+

- ARMB's since inception Net IRR is 11.9%
- Based on a PME+ analysis, ARMB's since inception Net IRR has outperformed the S&P 500 Total Return Index ("S&P 500 TR") by 406 bps

## ARMB NET PORTFOLIO AND S&P 500 TR PME+ SINCE INCEPTION



## ARMB NET PORTFOLIO HORIZON PERFORMANCE



As of Jun 30 2022.  
Net IRR is shown net of investment management fees charged by Abbott and gross of gains and losses realized upon the sale of distributed stock, including brokerage and other related commissions. The S&P 500 TR has not been selected to represent a benchmark for ARMB, but rather allow for comparison of ARMB's performance to that of a widely recognized index. No assurances can be given that cash flows will continue at this pace in the future, or that the Portfolio will make any further distributions.

Past performance is not a guide to future results and is not indicative of expected realized returns.  
See Important Information pages herein including [Abbott and Portfolio Investment Performance Information](#) and [Public Market Equivalent and Indices](#).

VALUATION & REPORTING IN PRIVATE EQUITY  
TIMING, METHODOLOGIES AND IMPLICATIONS

# REPORTING TIMELINE (ILLUSTRATIVE)

**March 2022**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
27	28	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

**May 2022**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

**July 2022**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
26	27	28	29	30	31	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	Notes				

**April 2022**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

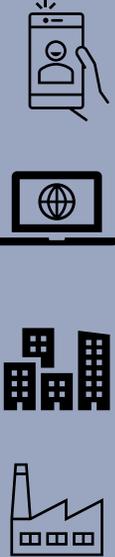
**June 2022**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

- 1 Quarter Ends
- 2 Companies report to GPs
- 3 LPAC meeting
- 4 Financials produced and delivered
- 5 Info collated and reported to ARMB

# VALUATION METHODS AND PROCESS

Portfolio Companies



Venture Capital Backed Companies

- Last Round Pricing
- Option Pricing Model
- Public Comparables
- Actual Public Price

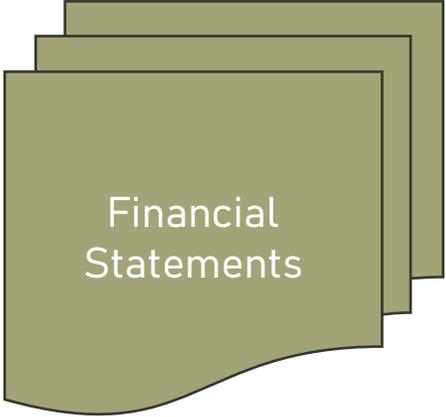
GP Valuation Process

LPAC Review, Discussion, Approval

GP for Finalization

Auditors (Annual Only)

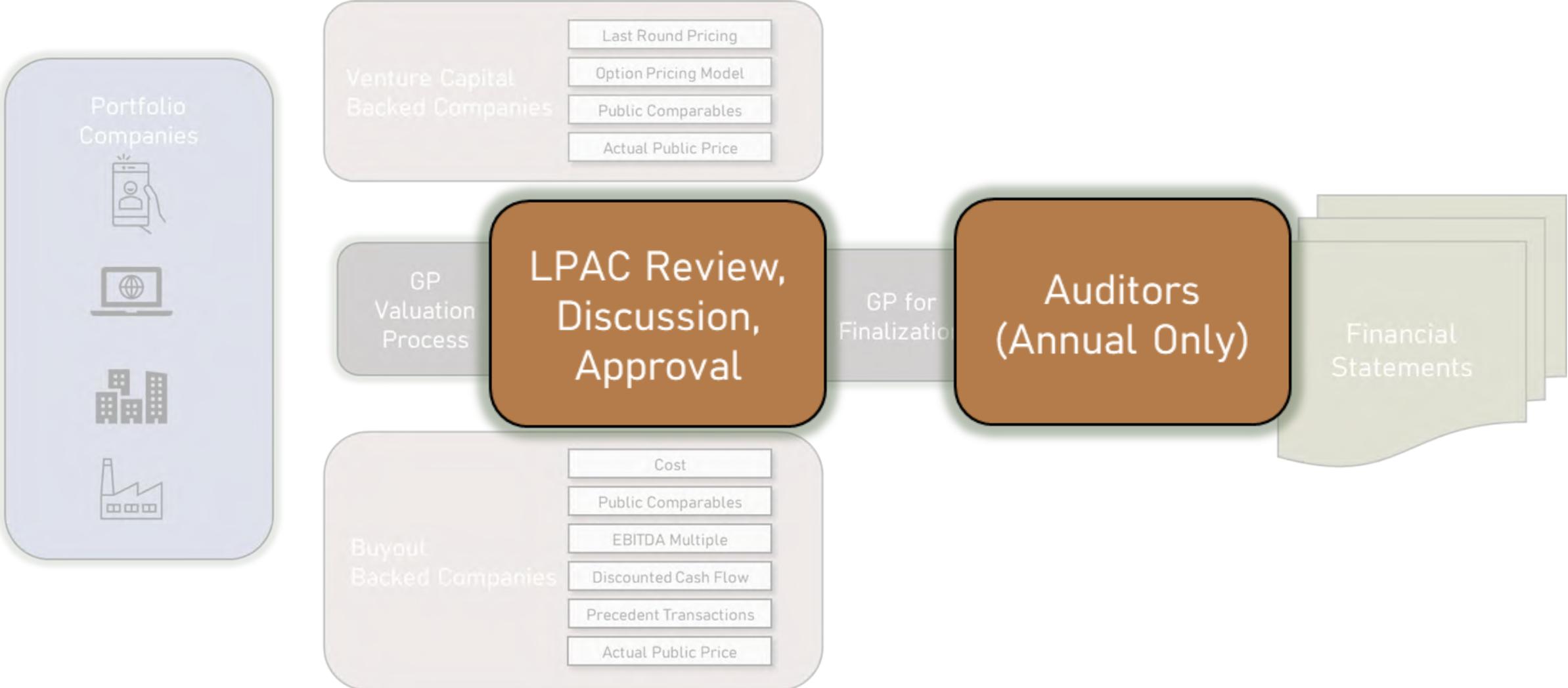
Financial Statements



Buyout Backed Companies

- Cost
- Public Comparables
- EBITDA Multiple
- Discounted Cash Flow
- Precedent Transactions
- Actual Public Price

# REPORTING SAFEGUARDS



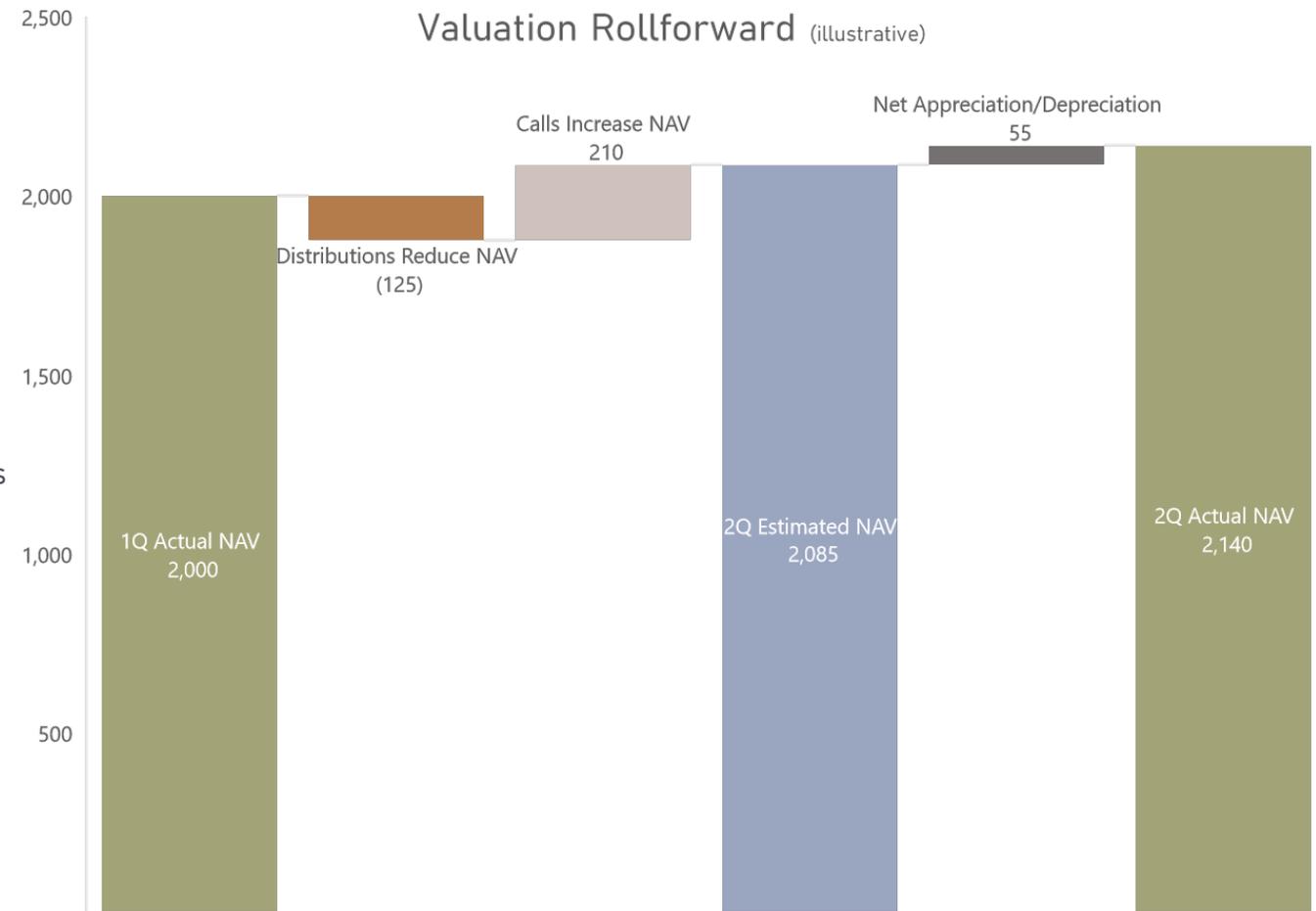
# INTERIM VALUATIONS

## MONTHLY ROLLFORWARD VALUATIONS

- Prior reported NAV
- Reduced by distributions to ARMB
- Increased by capital calls from ARMB
- Reported on last business day of each month

## QUARTERLY TRUE UP

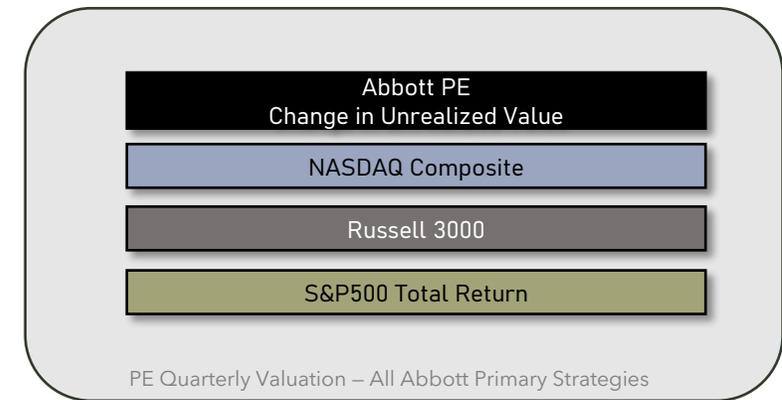
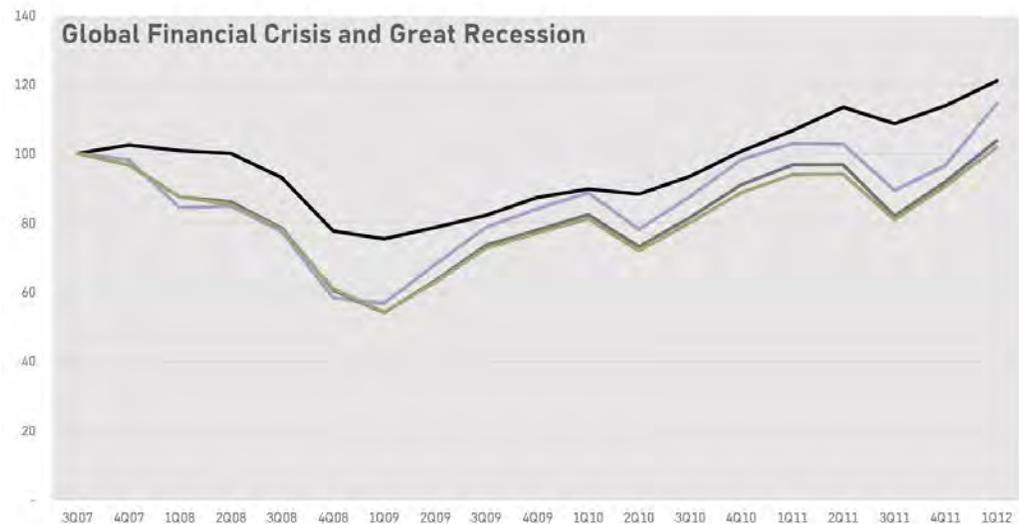
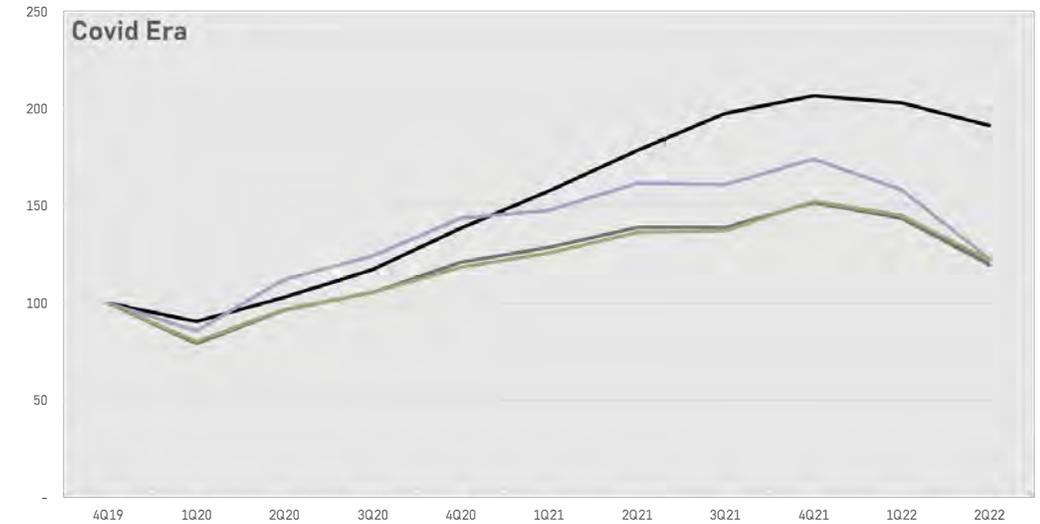
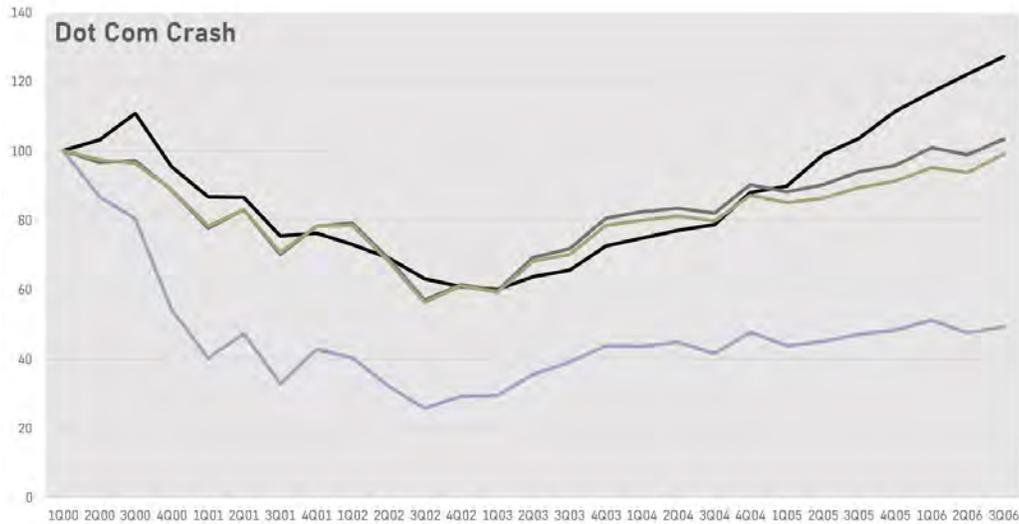
- Net change in underlying NAV captured from financial statements
- Reported circa 100 days after quarter end



For illustrative purposes; Valuation Rollforward reflects hypothetical data. Abbott makes no assurance that any private equity portfolio would achieve this NAV, Cash Flows, or Net Appreciation/Depreciation.

Past performance is not a guide to future results and is not indicative of expected realized returns.

# PRIVATE vs PUBLIC



Abbott PE – Abbott Primary Strategies.

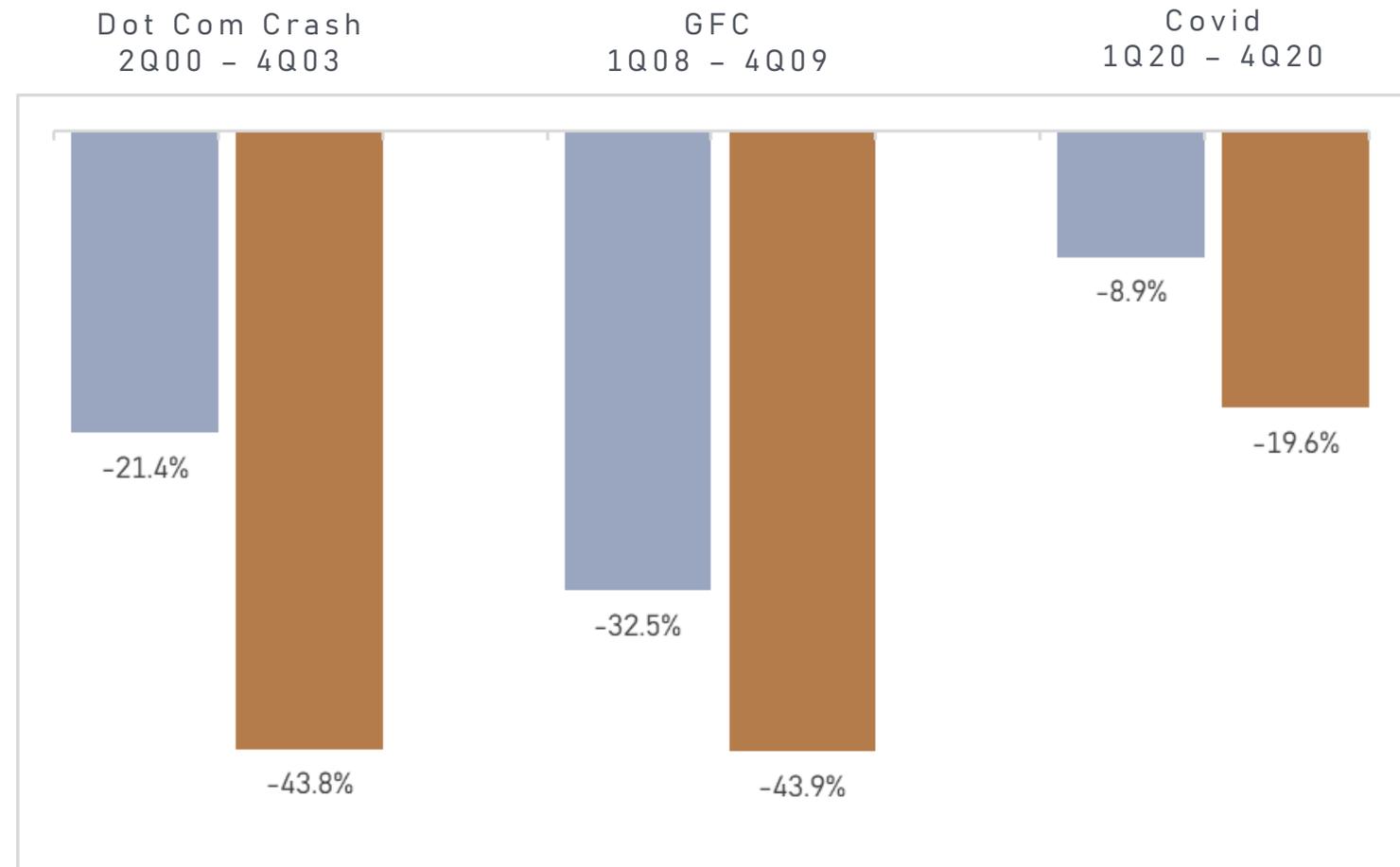
Past performance is not a guide to future results and is not indicative of expected realized returns.

See Important Information pages herein including [Important Information about Performance and Hypothetical Returns](#), [Public Market Equivalent and Indices](#), and [Abbott Strategies Performance](#).

# PRIVATE vs PUBLIC

## PEAK TO TROUGH

- **Private Equity** declines historically more muted
- **US Public Markets** down 33%-100% more than PE



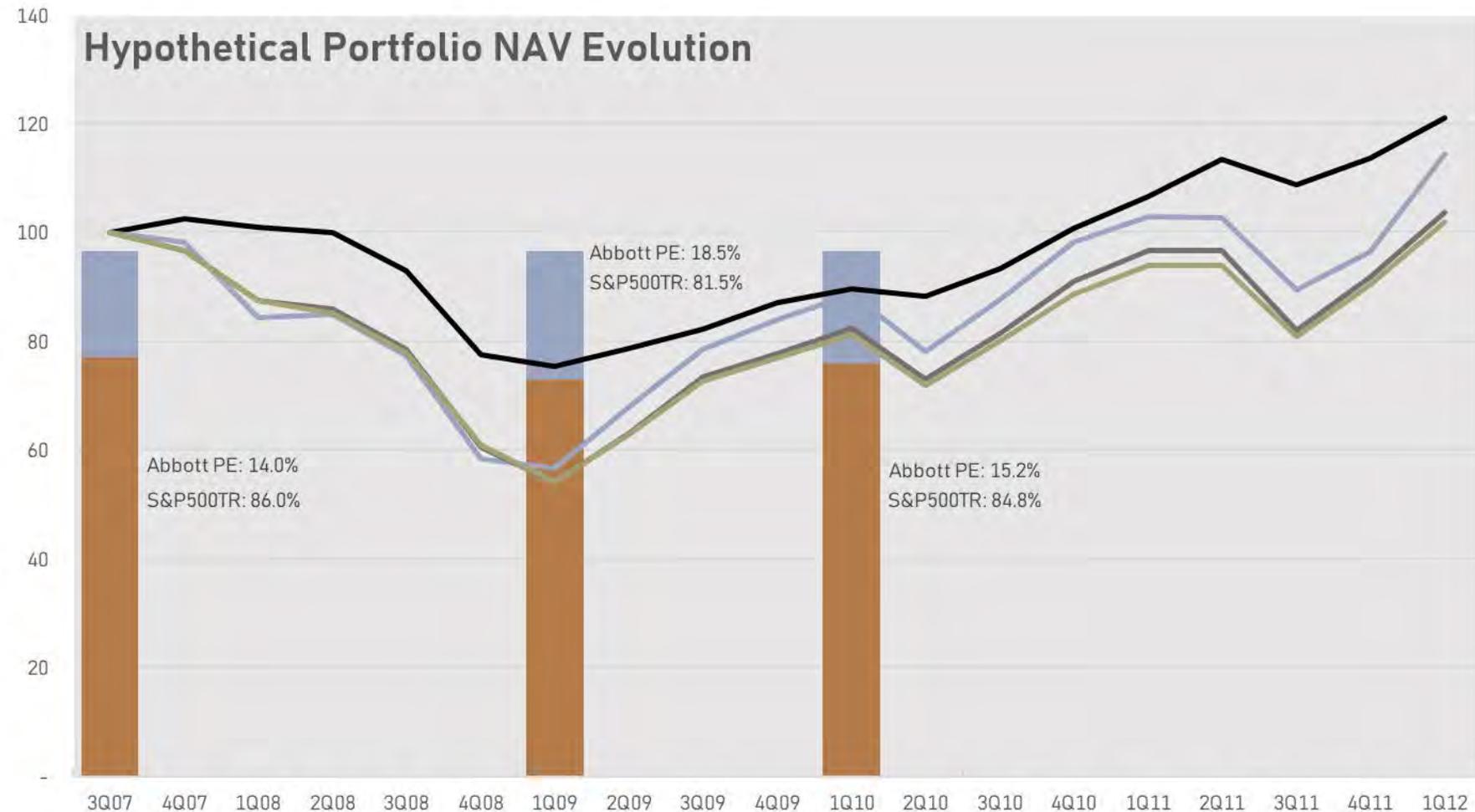
Source: For US Public Markets: Capital IQ - S&P 500 Total Return Index; For Private Equity: Cambridge Associates - Private Equity Horizon Pooled Net Returns. Cambridge Private Equity Index: End-to-End horizon returns, provided by Cambridge Associates based on data compiled from over 2,500 private equity funds, including fully liquidated partnerships, formed between 1986 and 2022.

Past performance is not a guide to future results and is not indicative of expected realized returns.

# PRIVATE vs PUBLIC

## DENOMINATOR EFFECT

- Rapid declines in public markets
- More muted and lagged PE response
- Self-correcting during recovery



Abbott PE – Abbott Primary Strategies.

For illustrative purposes. Abbott makes no assurance that any private equity portfolio would achieve this NAV, Cash Flows, or Net Appreciation/Depreciation.

Past performance is not a guide to future results and is not indicative of expected realized returns.

See Important Information pages herein including [Important Information about Performance and Hypothetical Returns](#), [Public Market Equivalent and Indices](#), and [Abbott Strategies Performance](#).

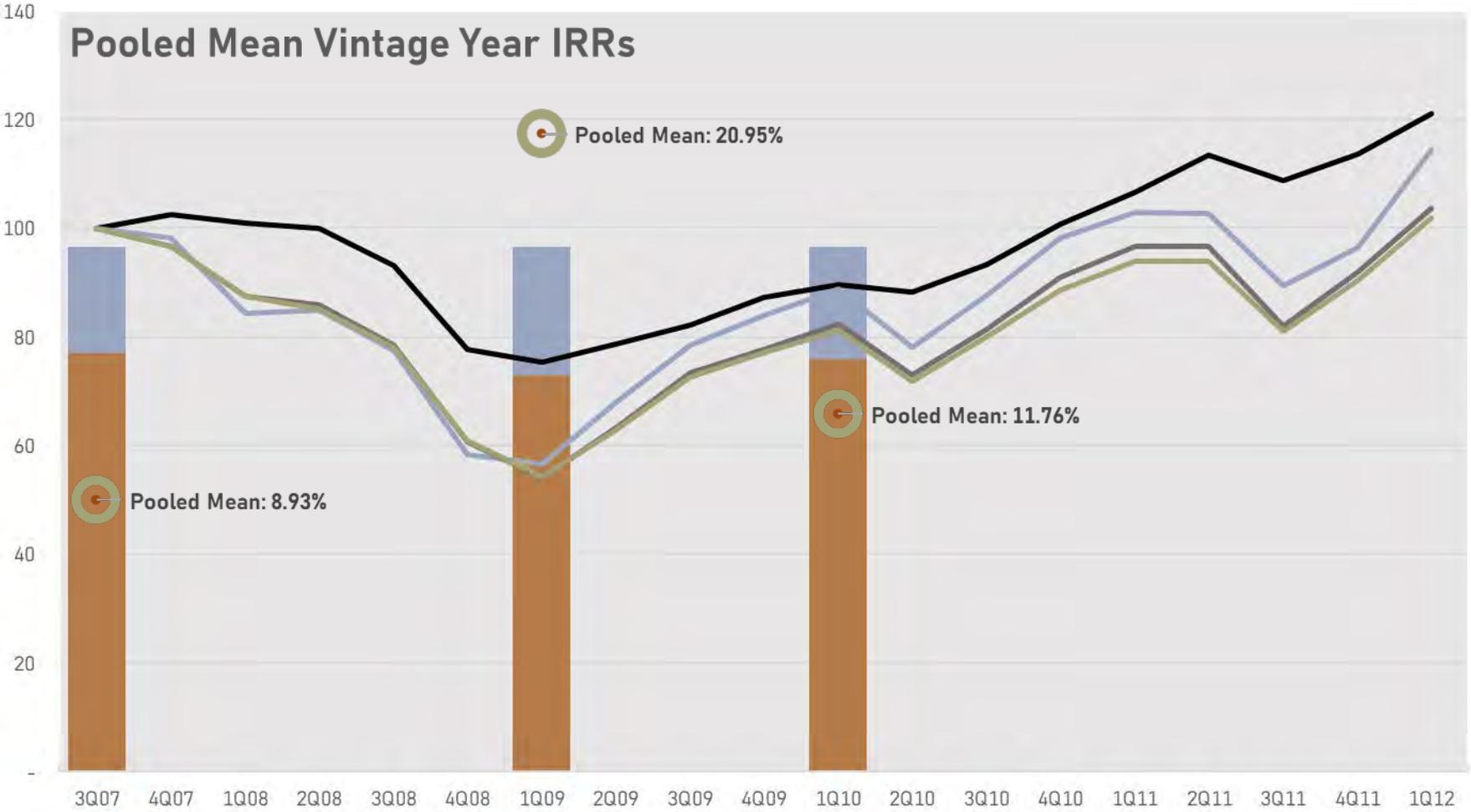
# CONSISTENT PACING

## DENOMINATOR EFFECT

- Rapid declines in public markets
- More muted and lagged PE response
- Self-correcting during recovery

## CONSISTENCY

- Challenged public markets often coincide with strong private equity vintage years
- Steady investors positioned for upswing



Pooled Mean reflects the North America Buyout IRR for the relevant VY as of Jun 30 2022, Insight Research. Abbott PE – Abbott Primary Strategies. For illustrative purposes. Abbott makes no assurance that any private equity portfolio would achieve this NAV, Cash Flows, or Net Appreciation/Depreciation.

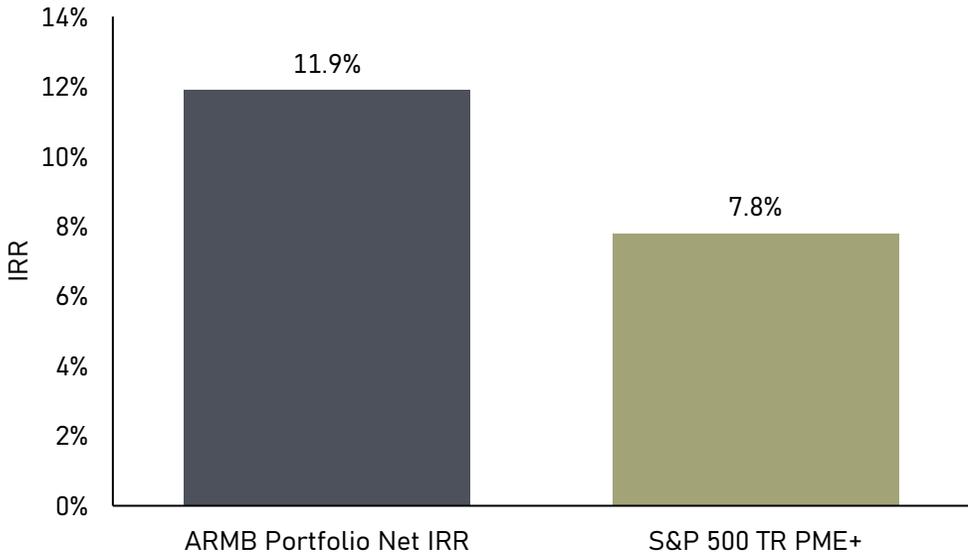
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# LONG TERM SUCCESS

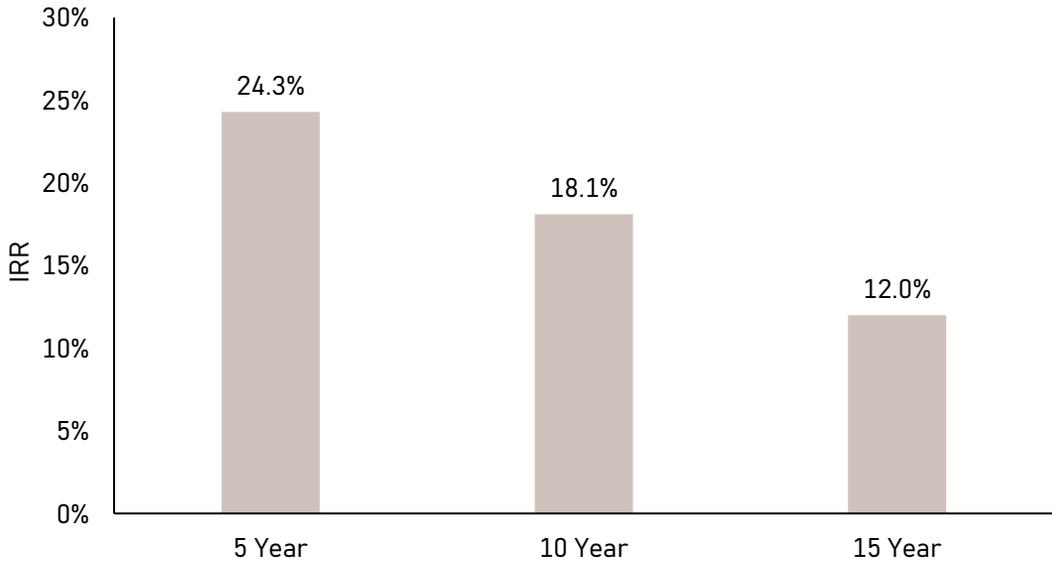
## ARMB NET PERFORMANCE

- Report timing, valuation methods, lag to public markets, denominator effect are all unusual in other asset classes, yet endemic to PE
- Long term, consistent investors in Private Equity have been rewarded

## ARMB NET PORTFOLIO AND S&P 500 TR PME+ SINCE INCEPTION



## ARMB NET PORTFOLIO HORIZON PERFORMANCE



As of Jun 30 2022.  
Net IRR is shown net of investment management fees charged by Abbott and gross of gains and losses realized upon the sale of distributed stock, including brokerage and other related commissions. The S&P 500 TR has not been selected to represent a benchmark for ARMB, but rather allow for comparison of ARMB's performance to that of a widely recognized index. No assurances can be given that cash flows will continue at this pace in the future, or that the Portfolio will make any further distributions.

Past performance is not a guide to future results and is not indicative of expected realized returns.  
See Important Information pages herein including [Abbott and Portfolio Investment Performance Information](#) and [Public Market Equivalent and Indices](#).

# IMPORTANT INFORMATION

# IMPORTANT INFORMATION

**Private equity investments are highly illiquid and are not suitable for all investors. All investments are subject to risk of loss, including the loss of principal.** Private Equity performance is volatile and the value of investment(s) will fluctuate. Additional risks include, among others, those associated with the use of leverage, illiquidity and restrictions on transferability and resale of private equity investments, dependence on the performance and judgment of underlying portfolio investment managers over which Abbott has no control, Abbott's ability to access suitable investment opportunities sufficient to satisfy each client's investment objectives, and the speculative nature of private equity investments in general. Diversification will not guarantee profitability or protection against loss. There is no assurance that any Abbott Client's objective will be attained.

The views and information provided are as of November 7, 2022 unless otherwise indicated and are subject to frequent change, update, revision, verification and amendment, materially or otherwise, without notice, as market or other conditions change. There can be no assurance that terms and trends described herein will continue or that forecasts are accurate. **Certain statements contained herein are statements of future expectations or forward-looking statements that are based on Abbott's views and assumptions as of the date hereof and involve known and unknown risks and uncertainties (including those discussed below and in Abbott's Form ADV Part 2A, available on the SEC's website at [www.adviserinfo.sec.gov](http://www.adviserinfo.sec.gov)) that could cause actual results, performance or events to differ materially and adversely from what has been expressed or implied in such statements.** Forward-looking statements may be identified by context or words such as "may, will, should, expects, plans, intends, anticipates, believes, estimates, predicts, potential or continue" and other similar expressions. Neither Abbott, its affiliates, nor any of Abbott's or its affiliates' respective advisers, members, directors, officers, partners, agents, representatives or employees or any other person (collectively "Abbott Entities") is under any obligation to update or keep current the information contained in this document.

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# IMPORTANT INFORMATION

## **Important Information about Performance and Hypothetical Returns**

**Past returns are not indicative of future performance or expected realized returns.** There is a possibility of complete or partial loss of capital with any private equity investment. Future returns will vary.

**Any hypothetical, composite or pro forma information contained herein is for illustrative purposes only and is not indicative of any future performance and does not reflect the actual results achieved by Abbott or any of its client accounts or investors. There is no assurance that this information accurately represents the performance that an investor would have achieved had it invested in any included transaction or any Abbott portfolio or that an investor will be able to make any profit or be able to avoid incurring any substantial losses.**

**Composite performance herein is hypothetical performance compiled by Abbott, is unaudited, and does not represent the actual return of any Abbott Client.** Hypothetical performance should not be considered indicative of Abbott's portfolio construction skill.

Expenses, management fees and performance fees/carried interest paid by existing or past Abbott Clients may not be comparable to the expenses, management fees and performance fees/carried interest that another or future Abbott Client will pay in respect of its investments and such amounts may be lower or higher than amounts actually paid with respect to investors in prior or subsequent Abbott Funds or paid by discretionary separate account clients. Results portrayed may reflect the reinvestment of realized proceeds and other earnings by the Abbott Funds and the underlying portfolio investments. Exchange rate fluctuations may affect returns. Interim performance data may not accurately reflect the actual current or expected future performance of an Abbott Client. Performance data should not be used to compare returns among private equity funds due to, among other factors, differences in vintage year, investment strategy, investment size, etc. The performance herein has not been calculated, reviewed, verified or in any way sanctioned or approved by the general partners of the portfolio funds. There can be no assurance that any Abbott Client, its portfolio investments and underlying portfolio companies, or the private and public equity and debt markets in general, will perform, or continue to perform, similarly to prior periods, funds, investments, or accounts. It should not be assumed that any fund organized, or investment made, in the future will ultimately be profitable or will equal the performance of the funds, investments, or accounts listed in this material.

Unrealized valuations depend upon assumptions that may be reasonable under the circumstances and at the time made, but actual realized returns on unrealized investments will depend upon, among other factors, future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale, all of which may differ from the assumptions used for the valuations incorporated herein. Actual realized returns on unrealized investments may differ materially and adversely from the returns indicated herein.

Further information desired to understand the risks and limitations of hypothetical performance is available upon request.

## **Public Market Equivalent and Indices**

Where indicated, returns are calculated as a **Public Market Equivalent (PME or PME+)** as described in "A Private Investment Benchmark", a 1996 white paper by Austin M. Long III and Craig J. Nickels, and PME+ as described in "Private Equity Benchmarking with PME+", published in the Venture Capital Journal (August 2003) by Christophe Rouvinez of Capital Dynamics. PME analysis/return is calculated without adjustment for management fee and carried interest paid to Abbott. PME is an internal rate of return calculated as if investor cash flows were used to purchase and sell shares of a public market index. PME+ scales distributions by a constant proportion such that the net remaining investment in the index equals the actual net asset value at the measurement date. PME+ is provided because if a portfolio significantly outperforms the public market index due to a high level of distributions, the net remaining investment in the index may be in a short position. A PME+ return calculation permits the net remaining investment in the index to equal the net asset value of the private equity portfolio at the measurement date. Any PME (or PME+) analysis is based on illiquid and unrealized values which will vary considerably over the life of an investment, thus making this type of comparison more relevant with respect to mature funds (i.e., where net asset value is a small fraction of total distributions).

Market indices, benchmarks or other measures of relative market performance are provided for information only and do not imply that an Abbott Client will achieve, or should expect, similar returns, volatility or results, or that these are appropriate benchmarks to be used for comparison. The market volatility, liquidity and other characteristics of private equity investments are materially different from publicly-traded securities and the composition of these indices does not reflect the manner in which any Abbott Client portfolio is constructed with respect to expected or actual returns, portfolio guidelines/restrictions, investment strategies/sectors, or volatility, all of which change. Index returns will generally reflect the reinvestment of dividends, if any, but do not reflect the deduction of any fees or expenses which would reduce returns. An investor cannot invest directly in the indices.

**S&P 500** (NAPE & Primary Strategies): Annualized time-weighted total returns of the S&P 500 (represents the 500 most widely-held large cap US stocks on the NYSE or NASDAQ) includes the reinvestment of dividends and income.

**Russell 3000** (SBO): Annualized time-weighted total returns of the Russell 3000 (a broad-based, market cap-weighted index of 3,000 U.S.-traded stocks) are based on values provided by Russell Investment Group and include the reinvestment of dividends.

**NASDAQ Composite** (VCGE): Annualized time-weighted total returns of the NASDAQ Composite (a broad, market cap-weighted index which includes a large percentage of finance, health care, technology, and consumer services businesses) are based on values provided by NASDAQ and include the reinvestment of dividends.

# IMPORTANT INFORMATION

## **Abbott Strategies Performance**

**Further information on the methodology used to calculate returns is available upon request. These return figures presented are pro forma and hypothetical in nature and actual performance of any limited partner may differ materially. See Important Information about Performance and Hypothetical Returns.**

**Abbott Primaries Strategies** include all primary investments made by Abbott on behalf of all **discretionary** client accounts being managed by Abbott as of the date indicated or, with respect to an Abbott Fund or other client account, through complete liquidation of such Abbott Fund or Abbott client account. Abbott excludes investments less than three vintage years of age (for each period); Abbott deems those investments not mature enough to provide meaningful valuation information.

Abbott Primary Strategy composites exclude all “emerging manager” investments made by Abbott solely on behalf of Abbott Select EM Buyouts Fund, LP, and Abbott Select EM II, LP (“Emerging Manager Portfolios”). Abbott’s Emerging Manager Portfolios are separately managed accounts that adhere to client directed investment guidelines focused primarily on investments in private equity fund managers with emerging, and potentially unproven, historical track records. Such investments are not generally suitable for investment by other Abbott Clients seeking a diversified, private equity portfolio in line with Abbott’s historical investment approach.

Private equity indices return data is provided for informational purposes only, is continually updated and subject to change, is based on only a limited number of private equity funds when compared to the entire private equity industry, and does not reflect a consistent benchmark or basis for comparison for private equity investments. Vintage year since-inception returns, provided by Insight Research, are based on data compiled from over 3,500 global private equity funds, including fully liquidated funds. Funds with a vintage year of prior to 1991 are aggregated into a single benchmark.

Insight Research and Abbott define vintage year differently; Insight Research defines VY as the year the fund made its initial investment while Abbott defines VY as the year the fund made its initial capital call. Vintage Year for portfolio funds that have not yet called capital may change depending on when the portfolio fund first calls capital.

Insight Research data set forth herein is preliminary as of the report date. Preliminary data by its nature and final results are likely to differ, perhaps materially, from these estimates. Preliminary cash flows may be materially different from final cash flows due to late arriving, updated, or refined information received after preliminary performance is published.

# IMPORTANT INFORMATION

## **Abbott and Portfolio Investment Performance Information**

**Vintage year** represents the year in which the portfolio fund made its initial capital call.

With respect to primary investments, **Commitment** represents the original commitment made to a portfolio fund plus any follow-on commitments and less any subsequent reductions in commitment declared by the general partner or managing entity of the portfolio fund. With respect to secondary interests, **Commitment** represents maximum cash outlay or, purchase price of the portfolio fund purchased on the secondary market plus the unfunded commitment at the time of purchase, and may also be adjusted by subsequent reductions in commitment declared by the general partner or managing entity of the portfolio fund. Except as otherwise noted, **Commitment** with respect to any portfolio fund denominated in non-U.S. currency reflects the amount paid (in U.S. dollars) plus the unfunded portion of the foreign-denominated commitment amount converted to U.S. dollars at the relevant foreign exchange rate as of the report date.

**Amount Paid-In** represents the cumulative amount of contributions paid to a portfolio fund by the Account as of the report date, including amounts paid for interest charges, management fees and/or other expenses, less any temporary returns of capital and other distributions identified by the general partner or managing entity as items that reduce paid-in capital. With respect to secondary interests, amount paid-in includes the purchase price of the portfolio fund purchased on the secondary market plus amounts paid-in subsequent to purchase date through the report date.

With respect to each portfolio fund, **Total Distributions** reflect all distributions of cash or stock from the portfolio fund to the Account as of the report date, excluding any temporary returns of capital and other distributions identified by the general partner or managing entity as offsets to paid-in capital. Net proceeds from sales of portfolio funds on the secondary market, if any, are also included in distributions. Unless otherwise noted, distributions of stock are valued as reported by the portfolio funds and such valuations do not take into account any net gains or losses realized upon the sale of such stock.

**Distributions/Realizations** equal the total distributions plus the net gains and losses realized on the sale of distributed stock. Net gains and losses realized on the sale of distributed stock are calculated as the difference between the net proceeds received from the sale and the value of the stock at distribution.

The **Valuation** for a portfolio fund investment is net of any management fees, carried interest, and other expenses of the portfolio fund and reflects fair value of the portfolio fund at the report date. Fair Value is based on the most recent available net asset value provided by the general partner or managing entity of the portfolio fund, including allocations of unrealized gains and losses on the underlying portfolio company investments, and may be adjusted by other amounts necessary to reflect the fair value of the portfolio fund as determined by Abbott during its most recently completed valuation review. If the most recent available net asset value is as of a date other than the report date, the valuation is adjusted by net cash flows, other than contributions identified by the general partner or managing entity as contributions for management fees and/or other expenses, from the date of the most recent available net asset value through the report date. Net asset values reported in non-U.S. currencies are translated at the relevant exchange rate at the close of business on the report date. The valuation of distributed stock held is based on the last publicly reported closing sale price as of the report date.

**Total Value** equals total distributions plus valuation.

**TVPI** represents total value divided by amount paid-in. TVPI is net of management fees, carried interest and other expenses of the portfolio funds but does not reflect any deduction for management fees or carried interest, if any, paid by the Account to Abbott. Except as otherwise noted, TVPI does not take into account net gains and losses realized on the sale of distributed stock. TVPI for the active and/or liquidated portfolio is net of gains and losses realized on the sale of distributed stock.

**IRR** represents the internal rate of return for a portfolio fund or the pooled internal rate of return for a strategy, vintage year and portfolio. IRR was calculated based on the actual due dates of the net cash flows between the portfolio funds and the Account since inception and the valuation of the portfolio fund investments at the report date. IRR is net of management fees, carried interest, and other expenses of the portfolio funds, but does not take into account management fees and carried interest, if any, paid by the Account to Abbott. Except as otherwise noted, IRR does not take into account net gains and losses realized on the sale of distributed stock. IRR for the Total ARMB portfolio is net of gains and losses realized on the sale of distributed stock.

# CONTACT US

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**Alaska Retirement Management Board  
Board Meeting**

**December 1, 2022**

**For information only  
For qualified investors only**

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# Table of contents

---

- **Organizational overview**
- The distressed debt asset class
- Market environment
- Q&A

# Glendon Capital Management LP

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## **The Firm**

- Los Angeles-based investment firm focused on credit opportunities and special situations
- Founded as an independent entity in 2013 through the spin-off of activities of Barclays Asset Management Group (“BAMG”)
- Led by Matthew Barrett, Holly Kim, Chris Sayer, Alex Thain, Chris Delaney and Brian Berman
- \$4.1 billion in commitments and assets under management as of September 30, 2022<sup>1</sup>

## **Strategy**

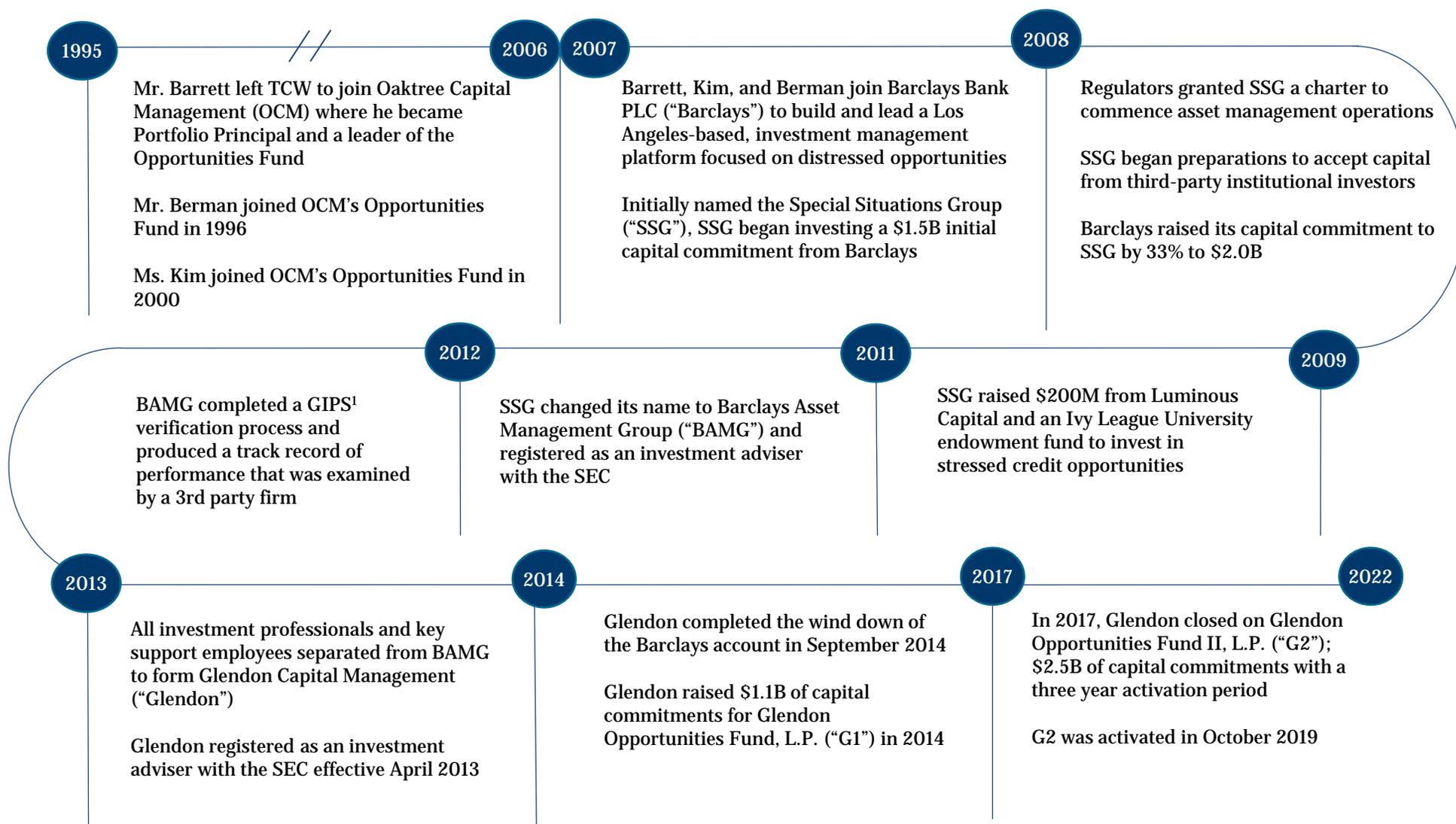
- Credit and equity investments in markets experiencing distress or dislocation
- Fundamental industry and entity analysis with deep understanding of complex transactions and processes, including bankruptcies and restructurings
- Flexible mandate to invest across geographies, industries, capital structures, and instruments
- Focus on capital preservation, predominantly targeting opportunities for equity-like returns with the downside protection afforded to creditors

## **Competitive Advantage**

- Experienced and cohesive team in credit opportunities and special situations investing
- Deep relationships across investors, dealers, law firms, and other key players in the distressed space
- Proven track record generating returns across multiple investment cycles
- Strong alignment of interest with investors
  - Delayed-draw offers ability to deploy capital at optimal points in the credit cycle
  - LP favorable fee structure (management fees are charged on invested capital)
  - Significant investment from the Glendon partners

[1] Includes \$167 million of undrawn commitments for Glendon Opportunities Fund, L.P. (“G1”) and \$505 million of undrawn commitments for Glendon Opportunities Fund II, L.P. (“G2”).  
Note: There can be no assurance that the funds and accounts managed by Glendon will achieve their objectives or avoid substantial losses. Past performance is not indicative of future results.

# Firm history



[1] Global Investment Performance Standards (GIPS): introduced in 1999 as voluntary standards to be used by investment managers for quantifying and presenting investment performance that ensure fair representation, full disclosure, and apples-to-apples comparisons. Administered globally through the thought-leadership and policy-setting arm of CFA Institute. The G1, G2 and Barclays track record and performance information contained herein do not reflect GIPS composites. Note: The past performance of investment entities associated with Glendon's investment professionals is not necessarily indicative of future results and provides no assurances of future results. Registration as an investment adviser does not imply any level of skill or training.

# Experienced investors

- The entire Glendon Team is focused on one strategy – Distressed Credit and Special Situations
- Team collectively has over 150 years of distressed investing experience
- Senior investment team<sup>1</sup> has worked together for an average of 18 years
- Team has demonstrated success across multiple economic cycles

## Investment Team and Infrastructure Leadership

**Matthew Barrett**  
Partner

36 years overall experience

- 16 years Glendon/BAMG
- 15 years Oaktree/TCW

**Holly Kim**  
Partner

26 years overall experience

- 16 years Glendon/BAMG
- 6 years Oaktree

**Chris Sayer**  
Partner

16 years overall experience

- 14 years Glendon/BAMG

**Alexander Thain**  
Partner

17 years overall experience

- 13 years Glendon/BAMG
- 4 years Goldman Sachs

**Chris Delaney**  
Partner

17 years overall experience

- 15 years Glendon/BAMG

**Brian Berman**  
Partner

31 years overall experience

- 16 years Glendon/BAMG
- 10 years Oaktree

**Taos Huskey**  
Principal

22 years overall experience

- 15 years Glendon/BAMG
- 2 years Oaktree

**Brian Lanktree**  
Principal, Head Trader

19 years overall experience

- 15 years Glendon/BAMG
- 4 years Citigroup

**Jamie Ashton**  
Senior Vice President

8 years overall experience

- 4 years Glendon

**Amir Chini**  
Vice President

8 years overall experience

- 1 year Glendon

**Hunter Kelly**  
Vice President

6 years overall experience

- 2 years Glendon

**Daniel Fisher**  
Senior Associate

5 years overall experience

- 1 year Glendon

**Alyssa Ellard**  
COO and Head of IR

7 years overall experience

- 7 years Glendon

**Haig Maghakian**  
General Counsel and CCO

20 years overall experience

- 4 years Glendon

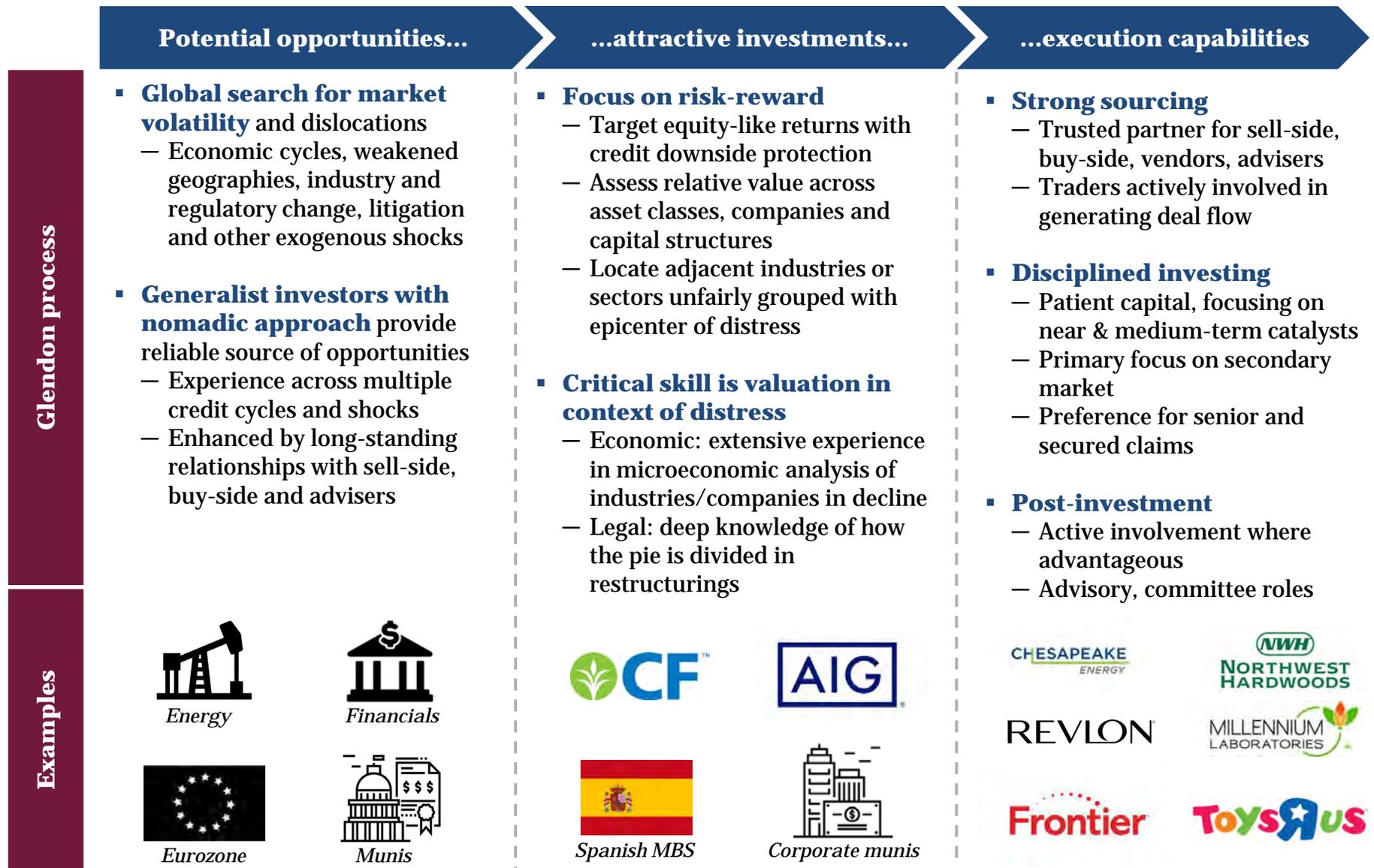
**Shang Ni**  
Chief Financial Officer

24 years overall experience

- Recent hire

[1] Glendon Partners and investment team Principals  
Note: Experience at BAMG includes the predecessor group, Barclays Special Situations Group.

# Glendon's skillsets and investment process are specialized for distressed debt investing



Note: Certain statements herein reflect Glendon's beliefs as of the date hereof based on prior experience and certain assumptions that Glendon believes are reasonable, but may prove incorrect. There is no guarantee that the views and opinions expressed on this page will prove to be accurate. There can be no assurance that future investments will be profitable or that Glendon will be able to successfully implement or achieve its investment strategy.

# Table of contents

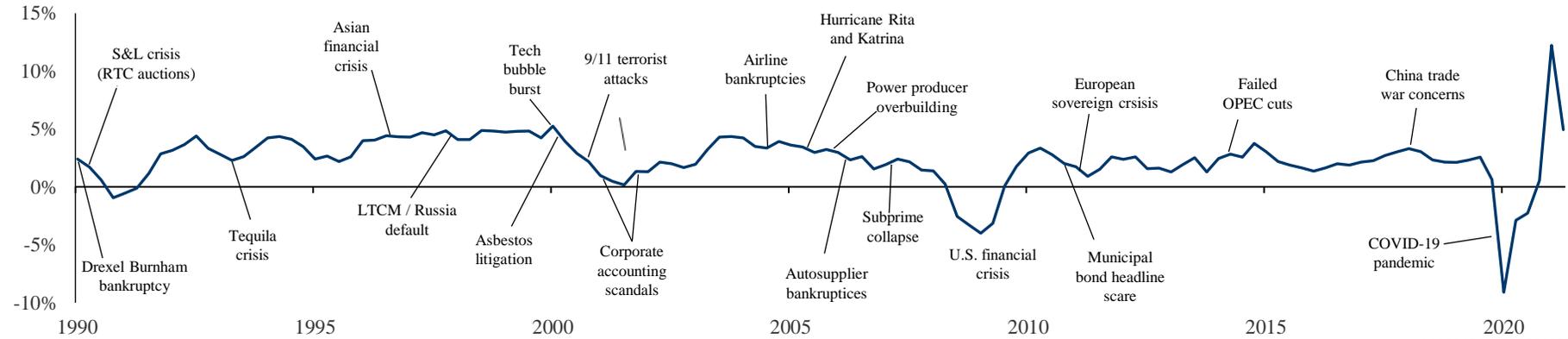
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- Organizational overview
- **The distressed debt asset class**
- Market environment
- Q&A

# Volatility events have been a recurring feature of markets that often cause overreactions in credit...

As of July 2021

Y-o-Y Change in U.S. Real GDP, quarterly



Economic Event<sup>1</sup>

Distressed situations over time

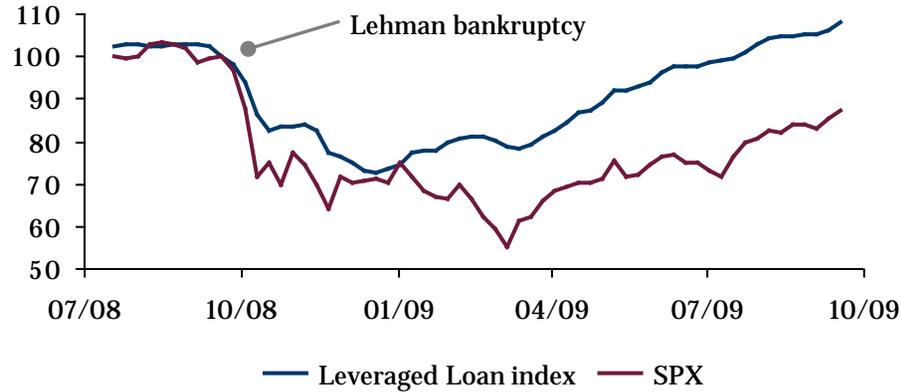


Source: Bloomberg; Federal Reserve Economic Data through and including July 1, 2021, company websites and annual

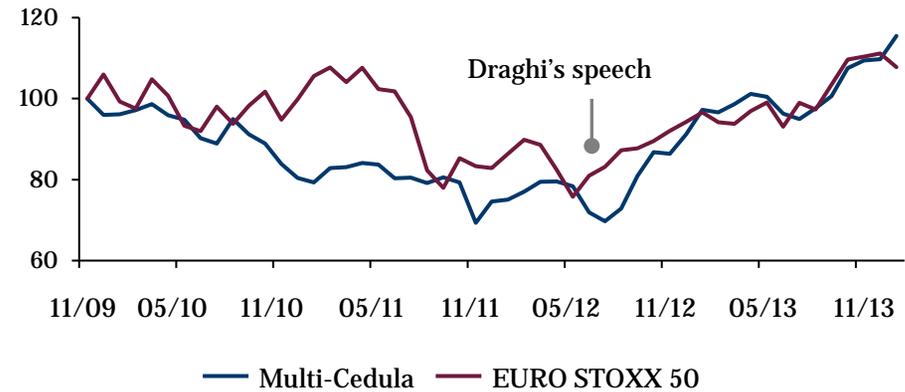
Note: Dates indicative; logo from the relevant time period used when possible; certain logos have been altered for space limitations. No endorsement is made, either express or implied, through the use of the name of any individual or company or the depiction of any individual, symbol, or trademark included herein. This list of situations (i) represents a subset of all distressed investment opportunities available during the relevant time periods, (ii) is presented for illustrative purposes only, and (iii) includes situations that neither the Glendon investment team, nor any account or client managed or advised by the team, has invested. No inference should be made that the Glendon investment team, or any account of client managed or advised by the team, actually invested in any of the above situations or that they are representative of investments Glendon is likely to make in the future.

# ...creating opportunity for equity-like returns with credit-like downside protection

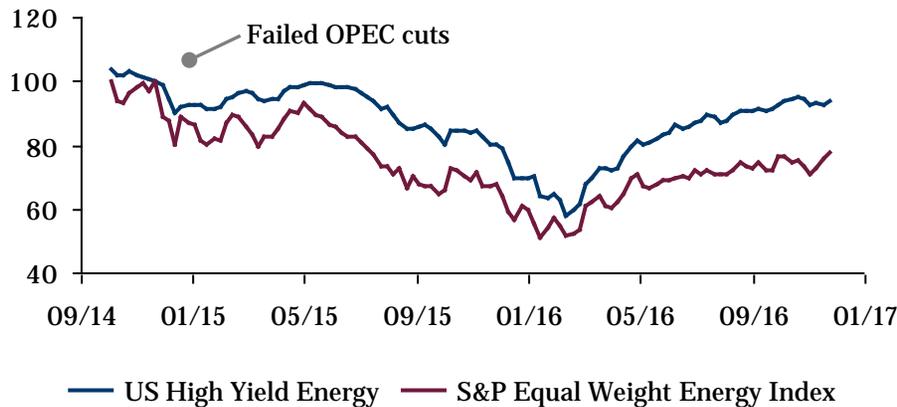
**Leveraged Loan Index vs. S&P 500<sup>1</sup>, indexed**



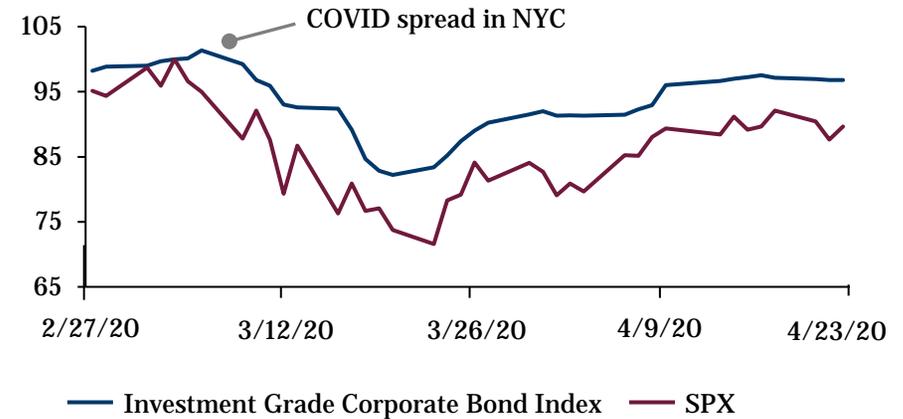
**Spanish Multi-Cedula vs. EURO STOXX 50<sup>1</sup>, indexed**



**US HY Energy vs. S&P Equal Weight Energy<sup>1</sup>, indexed**



**US Investment Grade vs. S&P 500<sup>1</sup>, indexed**



Source: Bloomberg, Barclays Securitized Products Research – Non Agency Price Index

[1] S&P 500 is represented by S&P 500 Total Return Index. Leveraged Loan Index is represented by S&P/LSTA Leveraged Loan Total Return Index. Spanish Multi-Cedulas represented by AYT Cedulas Cajas Global 3.75% 2022 bond excluding coupons. Euro Stoxx 50 performance represented by EURO STOXX 50. US High Yield Energy is represented by the BofA US High Yield Energy Index. US Investment Grade is represented by iBoxx USD Liquid Investment Grade Index (adjusted for total return). S&P 500 represented by SPX (adjusted for total return).

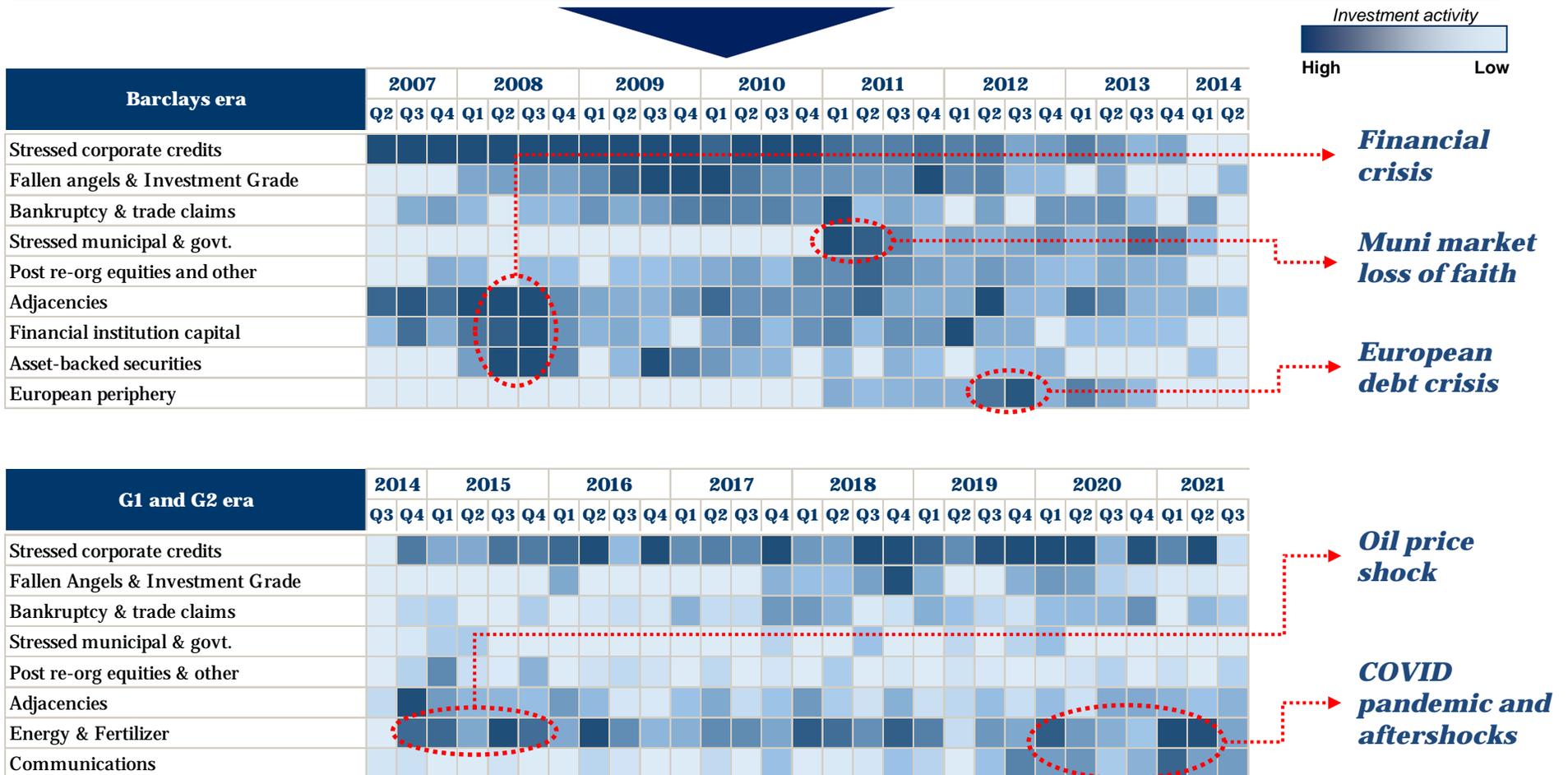
Note: There is no guarantee that the views and opinions expressed on this page will prove to be accurate. Comparisons and time periods chosen for illustrative purposes only; change of the indexes/composites or time periods may affect the comparison. Past performance is not indicative of future performance. Refer to the Descriptions of Referenced Indices and Endnotes for additional information.

# Glendon's team of generalist investors have migrated across assets and geographies to exploit distressed opportunities

As of September 30, 2021

## Glendon seeks to maximize distressed opportunity by:

- Adopting **nomadic** investment approach without sector siloing
- Ramping up learning curve quickly to **become experts** when a specific sector dominates landscape
- Demonstrating **both patience and conviction** as the context requires



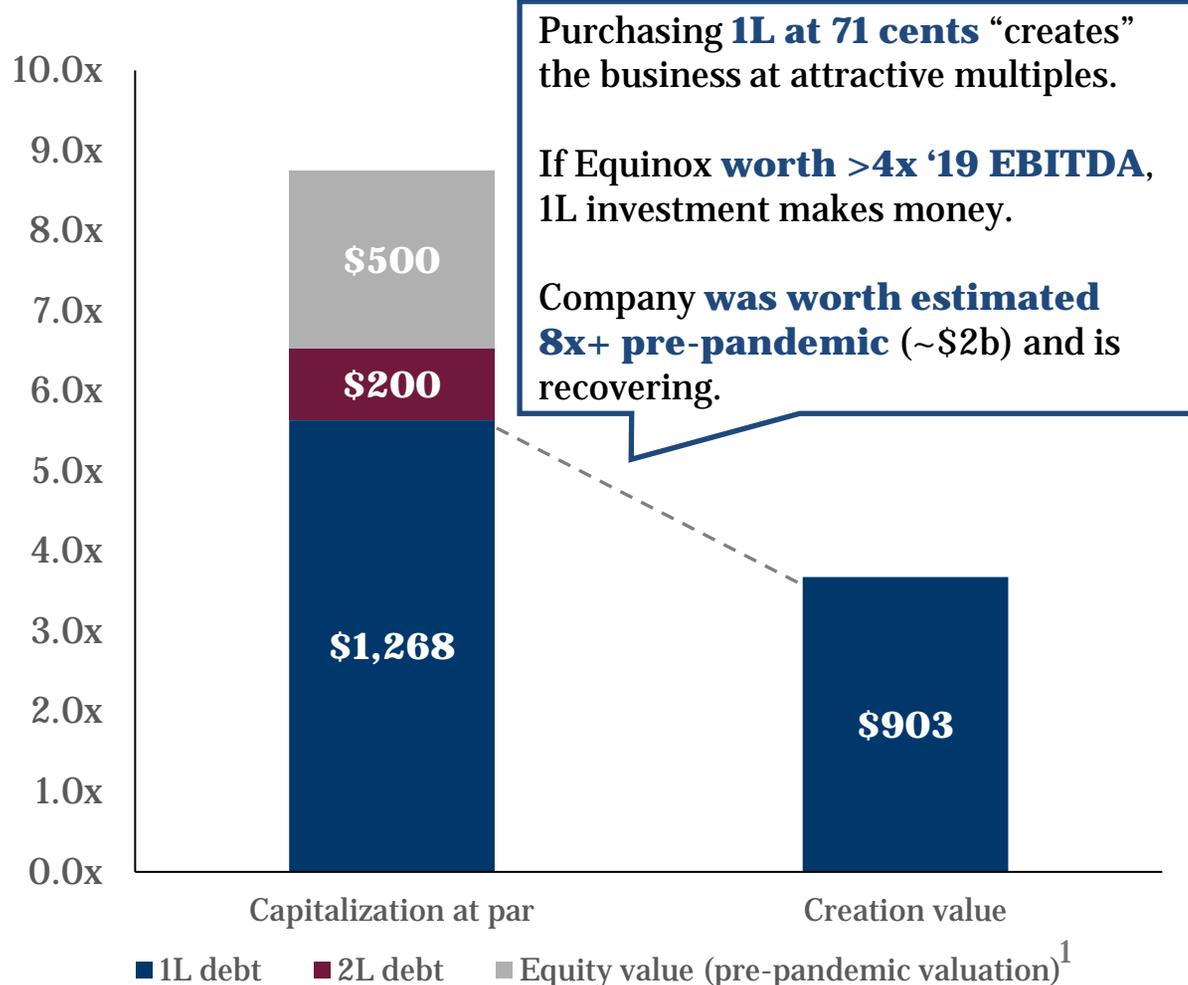
Note: There is no guarantee that the views and opinions expressed on this page will prove to be accurate. Past performance is not indicative of future performance. The opportunities Glendon pursues depend on a variety of factors, including prevailing market conditions and investment availability. There is no guarantee that any particular investment will be successful. Level of investment activity as indicated by color prior to Q3 2014 is relative to the levels of investment within the Barclays account. Level of investment activity as indicated by color following Q3 2014 is relative to the levels of investment within the Glendon Opportunities Fund. Dollar amounts of investment are not comparable between the Barclays account and Glendon Opportunities Fund. The heat map excludes certain trades classified as "other" and reflects approximate investment activity. Q4 2016 reflects trades through 12/15/16.

# Illustrative distressed debt example: Equinox

- Equinox is a **luxury fitness operator** with ~100 locations primarily in New York and California
- **Covid-19 pandemic massively disrupted operations**, with trough sales dropping ~90% due to forced closures and member loss
- **1L debt prices fell rapidly**, which implied an enterprise value meaningfully below pre-pandemic levels
- **Multiple ways to win for distressed buyers:** (1) par recovery if business rebounds, or (2) business files for bankruptcy, and lenders convert debt into equity

## Equinox cap structure

2019 EBITDA multiple; \$ in millions



[1] Estimated equity value

Source: Glendon analysis, company materials

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# Table of contents

---

- Organizational overview
- The distressed debt asset class
- **Market environment**
- Q&A

# What is the economic environment today?

- **Historical levels of inflation have seized developed markets**
  - ▶ US continues to be 8%+ YoY (6%+ core)<sup>1</sup>
  - ▶ Europe at 10%+ YoY, the highest since beginning of Euro<sup>2</sup>
  - ▶ Energy and labor shortages are more structural and harder to quickly remedy
  
- **Central banks can no longer tamp down market volatility**
  - ▶ Monetary policy predicated on persistently low inflation is gone
  - ▶ Fed must reclaim first leg of its dual mandate: price stability
  - ▶ “Third mandate” of pacifying markets via accommodative policy and stimulus is luxury of the past
  
- **Corporate profits recession looks likely**
  - ▶ Cloudier economic backdrop
  - ▶ Weakening consumer (e.g., suspension of pandemic stimulus, hiring freezes, real wage declines)
  - ▶ Persistently high labor costs

[1] Source: US CPI Urban Consumers, Bloomberg as of 9/30/2022

[2] Source: New York Times as of 11/1/2022

Note: There is no guarantee that the views and opinions expressed on this page will prove to be accurate. This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness.

# Distressed opportunities today

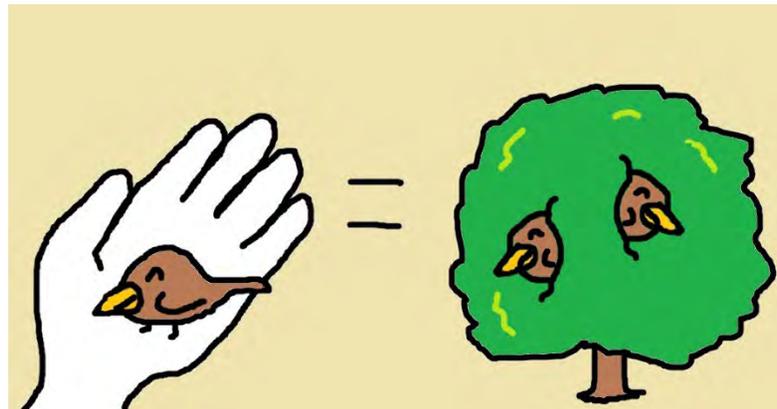


Source: Bloomberg; Company websites, JP Morgan High Yield and Leveraged Loan Research as of 11/10/2022, Cowen Cross Asset Overview as of November 2022

Note: Dates indicative; logo from the relevant time period used when possible; certain logos have been altered for space limitations. No endorsement is made, either express or implied, through the use of the name of any individual or company or the depiction of any individual, symbol, or trademark included herein. This list of situations (i) represents a subset of all distressed investment opportunities available during the relevant time periods, (ii) is presented for illustrative purposes only, and (iii) includes situations that neither the Glendon investment team, nor any account or client managed or advised by the team, has invested. No inference should be made that the Glendon investment team, or any account of client managed or advised by the team, actually invested in any of the above situations or that they are representative of investments Glendon is likely to make in the future.

## Current distressed debt market conditions

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# One year ago, there was almost no value to be found in credit markets...

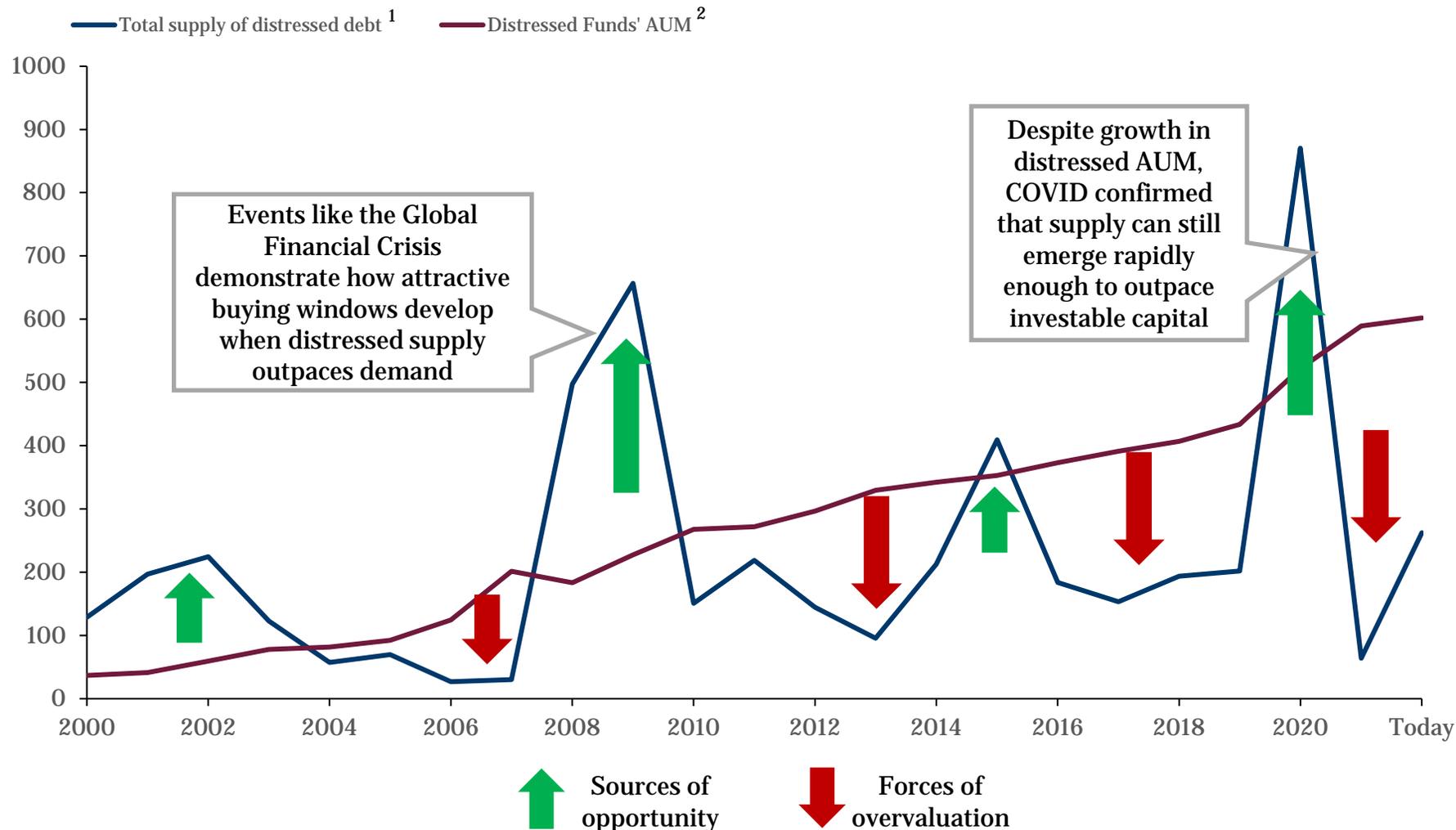


Source: Bloomberg Barclays US HY Index, US Breakeven 3 Year Index, Bloomberg

Note: This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness. The time period chosen is for illustrative purposes only; changes of time period may affect the comparison. Past correlation is not indicative of future correlation.

# ...and distressed debt demand well outstripped supply

## U.S. distressed debt (HY bonds and bank debt) and U.S. distressed funds' AUM (\$B)



Source: S&P LCD, JPM "Distressed Leverage Loans", JPM "Distressed Bonds Universe", JPM Default Monitor, Preqin, HFR

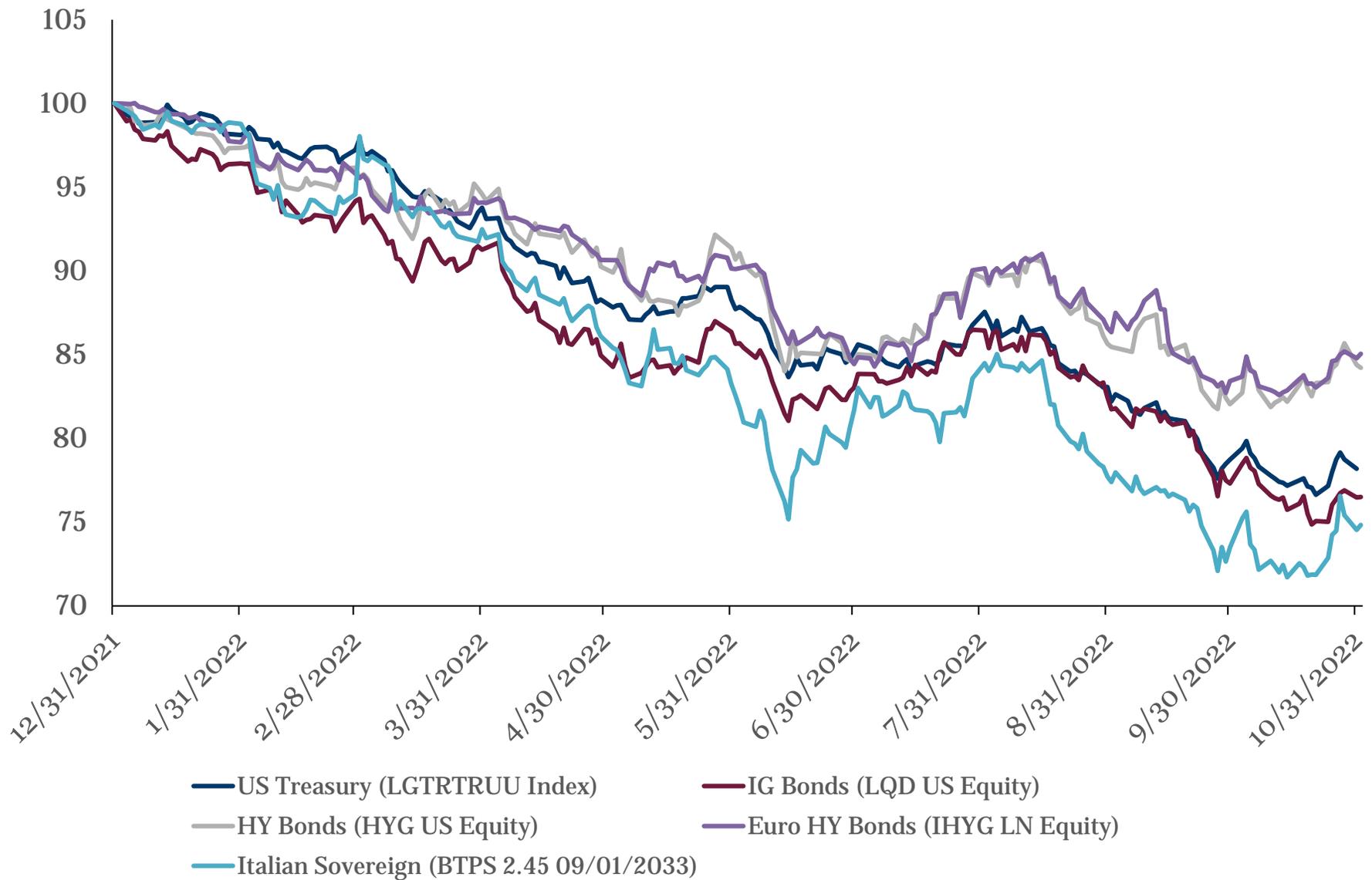
[1] Distressed debt only includes HY bonds and bank loans; distressed HY bonds are defined as bonds with a YTW > 1000 basis points; distressed bank debt defined as loans trading below \$80; also includes annual (or LTM, in case of 2021) defaulted HY bond and bank debt volume. Bank loan data sourced from S&P prior to 2011, JPM 2011 and onwards.

[2] Funds' AUM includes distressed PE dry powder and unrealized value and distressed hedge fund AUM

JPM "Default Monitor" and "High Yield Bond and Leveraged Loan Market Monitor" reports and data; S&P LCD; Preqin Distressed PE data as of 3/31/22, Hedge Fund Research (HFR) data as of 9/30/2022

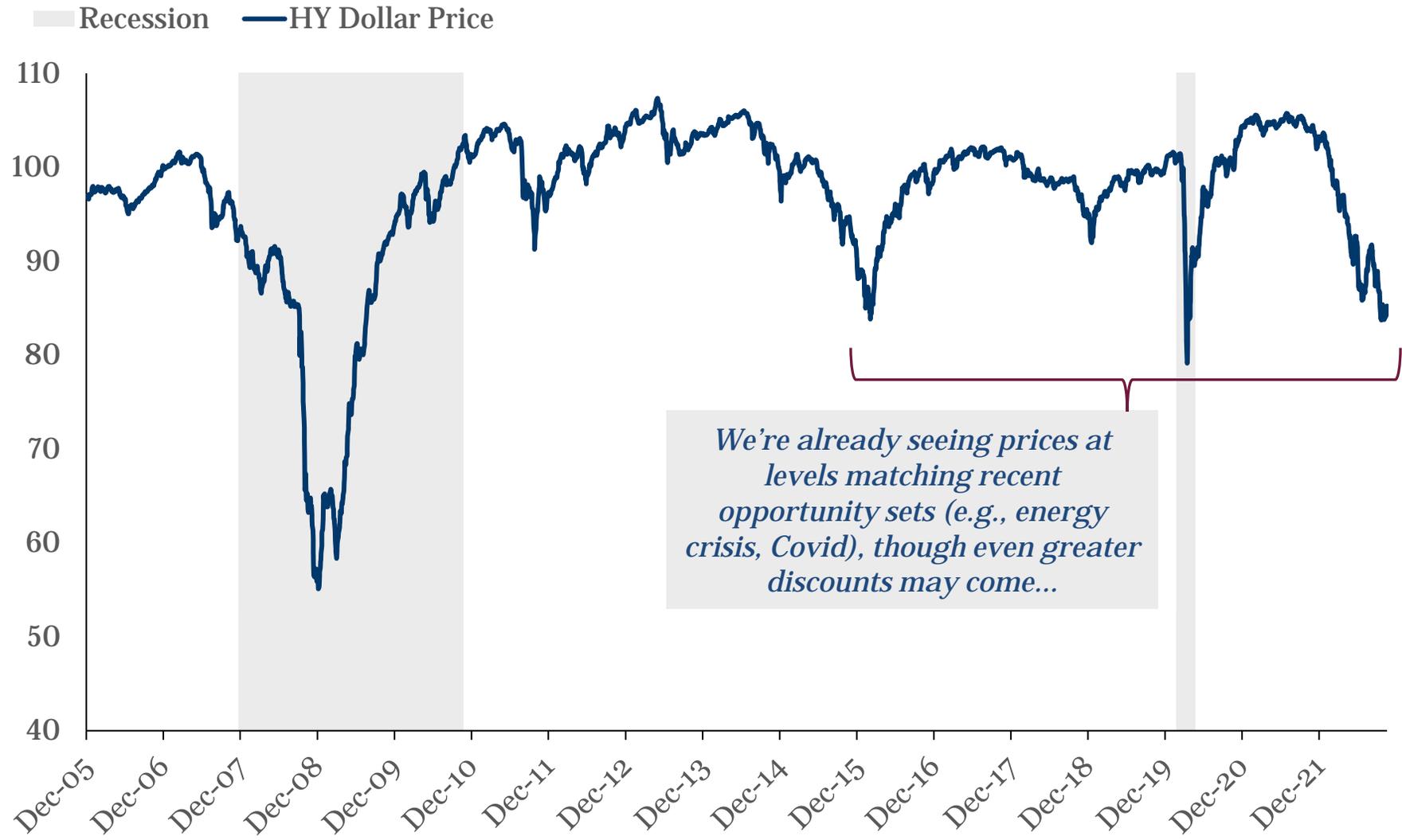
Note: This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness. The time period chosen is for illustrative purposes only; changes of time period may affect the comparison. Past correlation is not indicative of future correlation.

# 2022 has seen a sharp correction in asset prices, with no category of fixed income spared



Source: Bloomberg Global Agg Treasuries Total Return Index, iShares iBoxx S Investment Grade Corporate Bond ETF, iShares iBoxx High Yield Corporate Bond ETF, iShares EUR High Yield Corp Bond UCITS ETF, Bloomberg  
 Note: This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness. The time period chosen is for illustrative purposes only; changes of time period may affect the comparison. Past correlation is not indicative of future correlation.

# Dollar price of speculative debt has fallen meaningfully already, reflecting a hawkish Fed and weakening credit quality

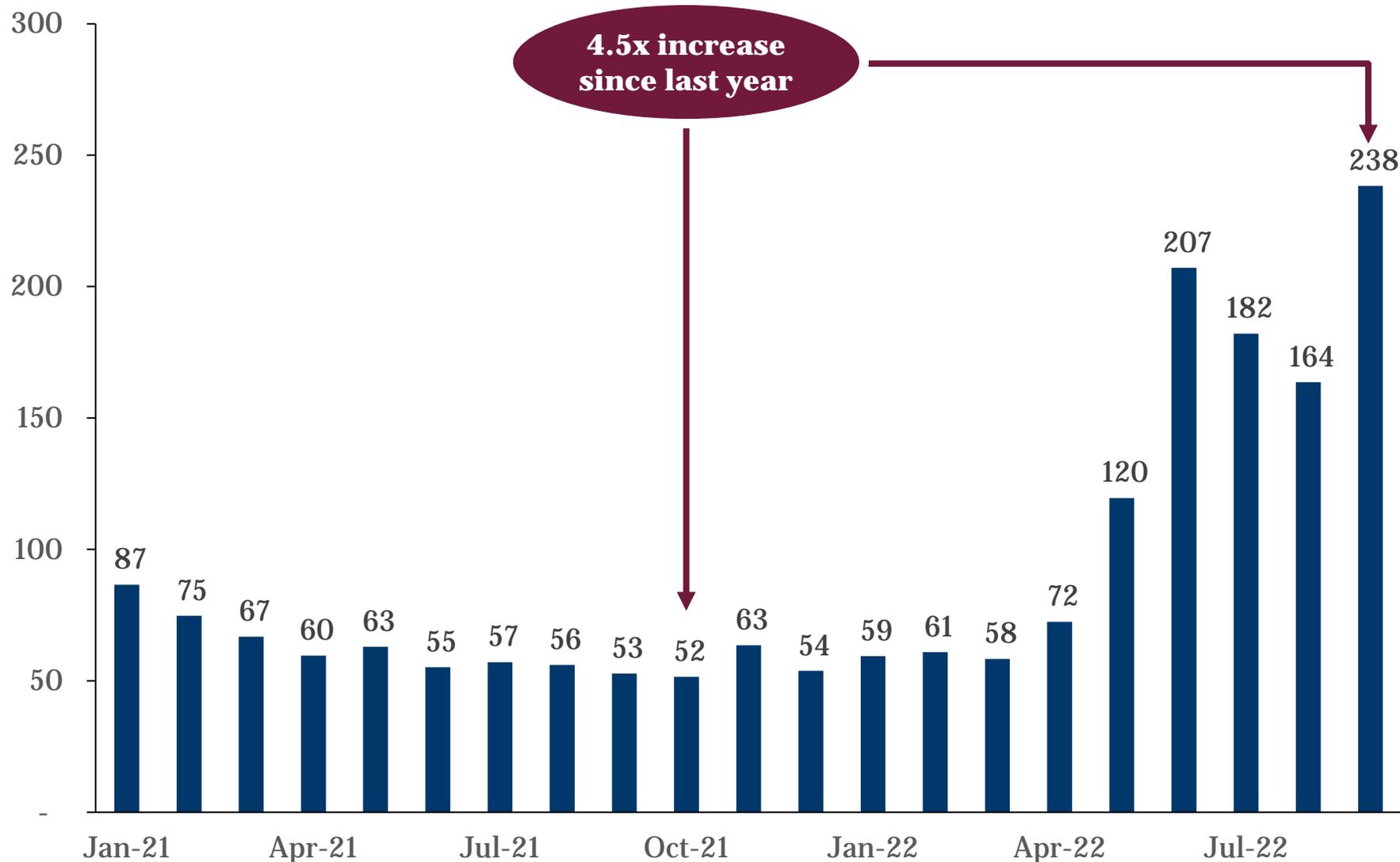


Source: Bloomberg US Corporate High Yield Bond Index, Bloomberg

Note: There is no guarantee that the views and opinions expressed on this page will prove to be accurate. This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness. The time period chosen is for illustrative purposes only; changes of time period may affect the comparison. Past correlation is not indicative of future correlation.

# Core distressed debt supply of HY bonds and leveraged loans has increased materially as a result

**Distressed debt<sup>1</sup> supply, \$B**



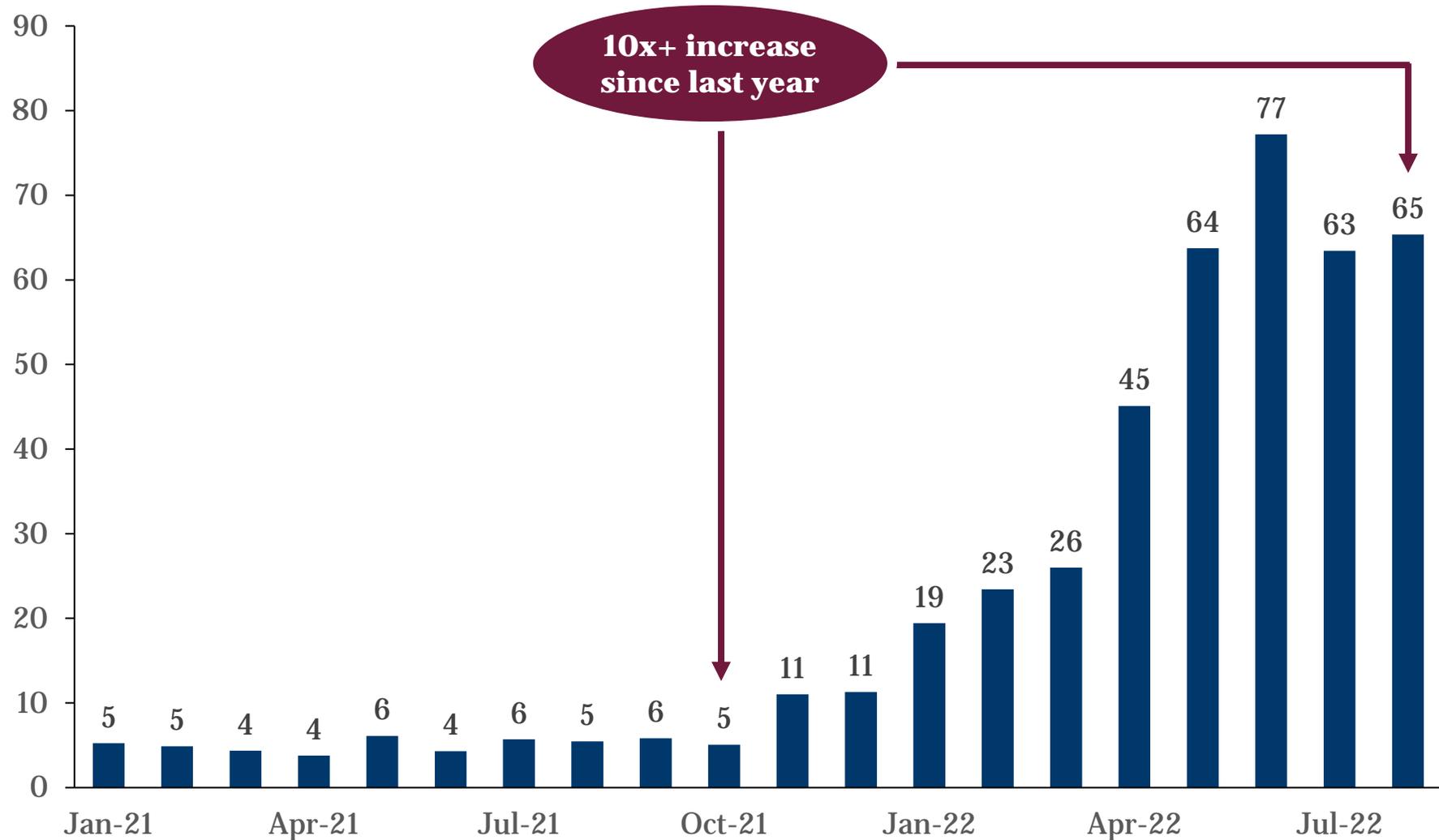
[1] Distressed debt only includes HY bonds and bank loans; distressed HY bonds are defined as bonds with a YTW>1000 basis points; distressed bank debt defined as loans trading below \$80; also includes annual (or LTM, in case of 2021) defaulted HY bond and bank debt volume.

Source: JPM "Distressed Leverage Loans", JPM "Distressed Bonds Universe", JPM Default Monitor

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# And notably, opportunity increasingly includes areas outside of leveraged finance

## Converts trading below 80, \$B

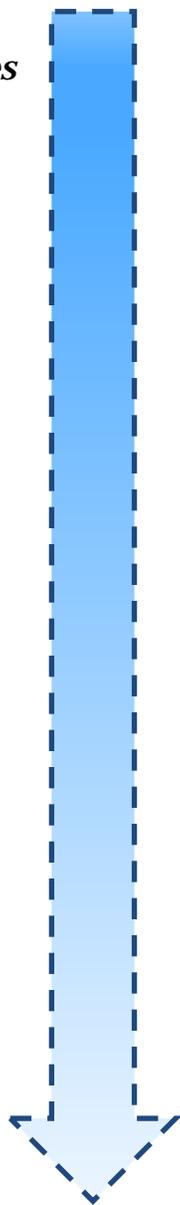


Source: BOFA Global Convertibles - Global Convertibles Outlook: Fall 2022

Note: There is no guarantee that the views and opinions expressed on this page will prove to be accurate. This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness. The time period chosen is for illustrative purposes only; changes of time period may affect the comparison. Past correlation is not indicative of future correlation.

# We're already actively triaging and investing in the initial pockets of weakness

*Current opportunities*



**Converts:** one of the first fixed income asset to crack when rising rates and aggressive cash burn raised doubts about their growth-focused issuers.

**Leveraged finance:** LBOs and rescue financing during Covid have saddled issuers with heavy debt loads that may become untenable if profits shrink.

**Direct lending:** relatively new asset class untested by a true recession that helped fuel recent buyout boom.

**Europe / EM:** flawed energy policies and weak currencies suggest ongoing stress, especially for corporates and sovereigns with USD liabilities.

**Real estate:** high leverage compounded with secular slowdown has potential to create opportunities if weakness is prolonged.

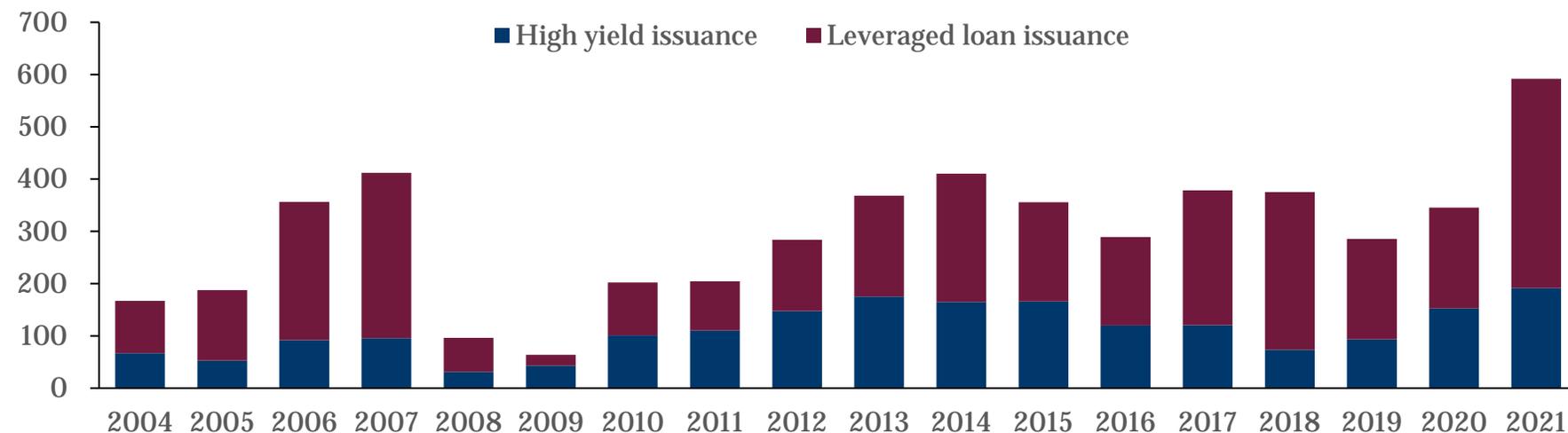
**Other:** asset-backed, financial institutions, investment grade and other asset classes could materialize during a recession.

*Down the road*

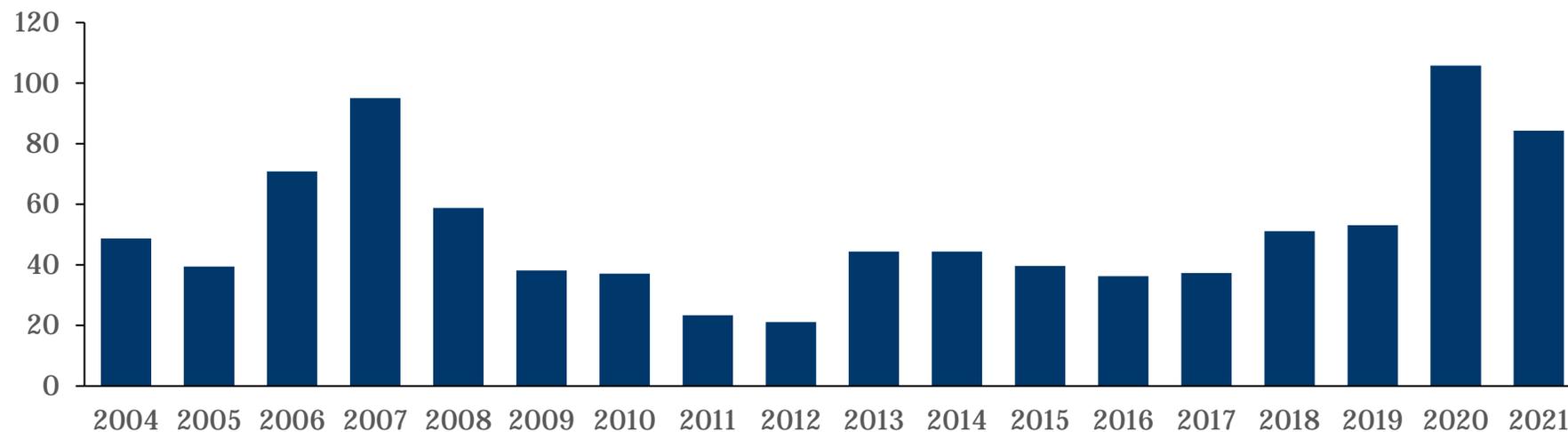
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# Recent issuance boom analogizes 2006/2007 trend

## Speculative debt issuance – ex refinancings, \$B



## US convertible issuance, \$B



Source: Pitchbook.

Note: This information is based upon information that Glendon considers reliable, but is not guaranteed as to accuracy or completeness. The time period chosen is for illustrative purposes only; changes of time period may affect the comparison. Past correlation is not indicative of future correlation.

# Table of contents

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- Organizational overview
- The distressed debt asset class
- Market environment
- **Q&A**

# Q&A

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## Questions & answers

# Descriptions of referenced indices and mutual funds

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**BLOOMBERG BARCLAYS US HY INDEX:** The Bloomberg Barclays US Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on Barclays EM country definition, are excluded.

**BLOOMBERG GLOBAL AGG TREASURIES TOTAL RETURN INDEX:** The Bloomberg Barclays Global Aggregate index is a flagship measure of global investment grade debt from a multitude local currency markets. The is a sub-index.

**CONSUMER PRICE INDEX:** Consumer Prices (CPI) are a measure of prices paid by consumers for a market basket of consumer goods and services. The yearly (or monthly) growth rates represent the inflation rate.

**EUROSTAT EUROPEAN UNION HICP ALL ITEMS YOY NSA:** The index is harmonized index of consumer prices used primarily within the European Union as a measure of prices paid by consumers for a market basket of goods and services. It is calculated using the same methodology across countries to allow for comparable measures of inflation. The yearly (or monthly) growth rate represents inflation.

**ISHARES EUR HIGH YIELD CORP BOND UCITS ETF:** The iShares EUR High Yield Corp Bond UCITS ETF is an exchange-traded fund incorporated in Ireland. The Fund aims to track the performance of the Markit iBoxx EUR Liquid High Yield Index.

**ISHARES IBOXB HIGH YIELD CORPORATE BOND ETF:** The iShares iBoxx High Yield Corporate Bond ETF is an exchange-traded fund incorporated in the U.S. The ETF seeks to track the investment results of an index composed of U.S. dollar-denominated, high yield corporate bonds.

**ISHARES IBOXB \$ INVESTMENT GRADE CORPORATE BOND ETF:** The iShares iBoxx \$ Investment Grade Corporate Bond ETF is an exchange-traded fund incorporated in the U.S. The ETF seeks to track the investment results of an index composed of U.S. dollar-denominated, investment-grade corporate bonds.

**S&P 500 INDEX:** The index is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index was developed with a base level of 10 for the 1941-1943 base period.

**S&P 500 TOTAL RETURN INDEX:** The index is calculated intraday by S&P based on the price changes and reinvested dividends of the S&P 500 Index with a starting date of Jan 4, 1988.

**US BREAKEVEN 3 YEAR INDEX:** The rates are United States breakeven inflation rates calculated by subtracting the real yield of the inflation linked maturity curve from the yield of the closest nominal Treasury maturity. The result is the implied inflation rate for the term of the stated maturity.

# Risk factors

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**Investors should be aware that an investment in the funds and accounts managed by Glendon is speculative and involves a high degree of risk. The following is a summary of certain considerations.**

**NO ASSURANCE OF INVESTMENT RETURN.** There can be no assurance that the objectives of the funds and accounts managed by Glendon will be achieved or that an investor will receive any return on its investment in such. The performance of the funds and accounts managed by Glendon may be volatile and investments are subject to general economic conditions, normal market fluctuations, adverse litigation or court decisions, bankruptcy risks, tax or regulatory changes, counterparty credit risks, diligence failures, fraud, political and foreign currency exchange risk on foreign investments, lack of control, illiquidity, and other risks inherent in investing in securities and other financial instruments. The value of investments and the income from them can go down as well as up, and an investor may not get back the amount invested. Investments may decline in value and could result in a total loss of investment. Investments should only be made after assessing the direction, timing, and magnitude of potential future changes in value, as the return of any such investment will be dependent upon such changes, among others.

**VOLATILITY.** The level of change in value of something over time is its "volatility". Volatility may be affected by performance of the underlying assets, along with financial, political, and economic events and other market conditions.

**USE OF LEVERAGE.** Subject to limitations, indebtedness may be incurred on a portfolio-wide basis or against specific investments. To the extent leverage is utilized, any event that adversely affects the value of an investment would be magnified. The cumulative effect of the use of leverage in a market that moves adversely to an investment could result in a loss that would be greater than if leverage had not been used.

**FEES.** An investment in funds and accounts managed by Glendon entails the payment of certain fees, expenses, and carried interest, which will reduce investor returns.

**LONG-TERM INVESTMENT.** An investment in funds managed by Glendon is suitable only for certain sophisticated investors who have no need for immediate liquidity in their investment. Interests in funds managed by Glendon are not freely transferable and may not be withdrawn. There is not now and will not be a public or secondary market for interests in funds managed by Glendon.

**TAX MAY APPLY.** Payments may be subject to tax, withholding, and other charges or deductions.

**HIGHLY COMPETITIVE MARKET FOR INVESTMENT OPPORTUNITIES.** The activity of identifying, completing and realizing attractive investments is highly competitive, and involves a high degree of uncertainty. There can be no assurance that the funds and accounts managed by Glendon will be able to locate, consummate and exit investments that satisfy their rate of return objectives or realize upon their values or that they will be able to invest fully their committed capital.

**RELIANCE ON KEY MANAGEMENT PERSONNEL.** The success of the funds and accounts managed by Glendon will depend, in large part, upon the skill and expertise of certain Glendon professionals. There can be no assurance that such professionals will continue to be associated with Glendon, or actively involved with the affairs of funds and accounts managed by Glendon throughout their terms, or that suitable replacements will be found should a professional become incapacitated or otherwise unable to devote sufficient time, energy and resource to the activities of the funds and accounts managed by Glendon. The loss of the services of one or more of such persons could have a material adverse impact on the ability of funds and accounts managed by Glendon to realize their investment objectives.

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# Endnotes (1/3)

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## Performance Results

**Past performance is not necessarily indicative of future results, and there can be no assurance that such returns will be achieved, that the funds and accounts managed by Glendon will achieve comparable results or that such funds and accounts will be able to implement their investment strategy or achieve their investment objectives or target portfolio construction.**

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## Endnotes (2/3)

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## Endnotes (3/3)

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# Cybersecurity in the Executive Branch

A presentation to:



The Alaska Retirement Management Board



Presented by Chris Letterman, CISO

**One government, empowered by innovative technical collaboration.**

# Presentation Agenda

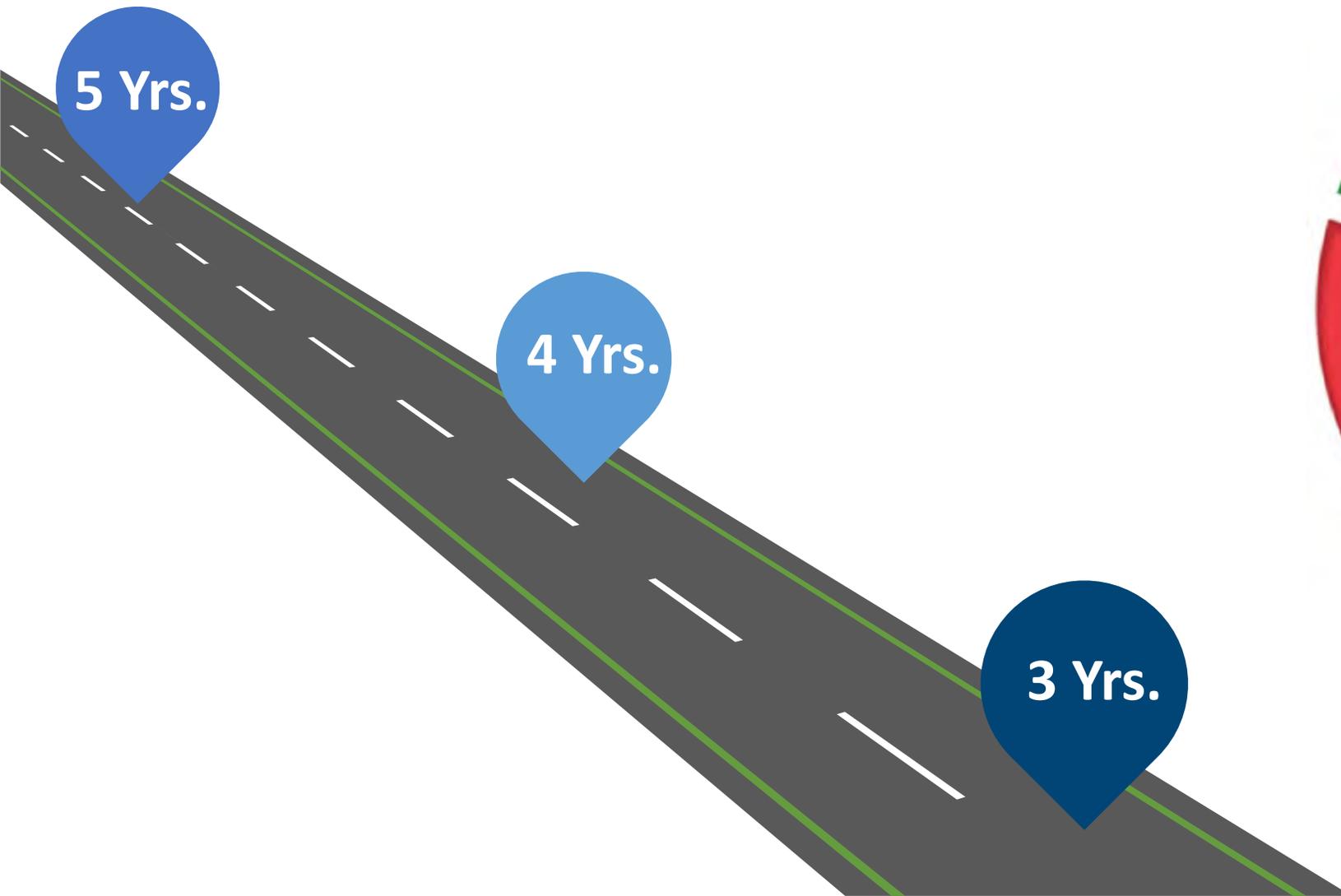
- **Organizational Priorities**
  - **Alaska Cyber Road Map**
  - **Strategic Security Alignment**
  - **Security Transformation**
  - **Hardening our environment**
  - **Security Consolidation**
  - **Future Security Posturing**
- 
- **Questions**



# Key Organizational Priorities



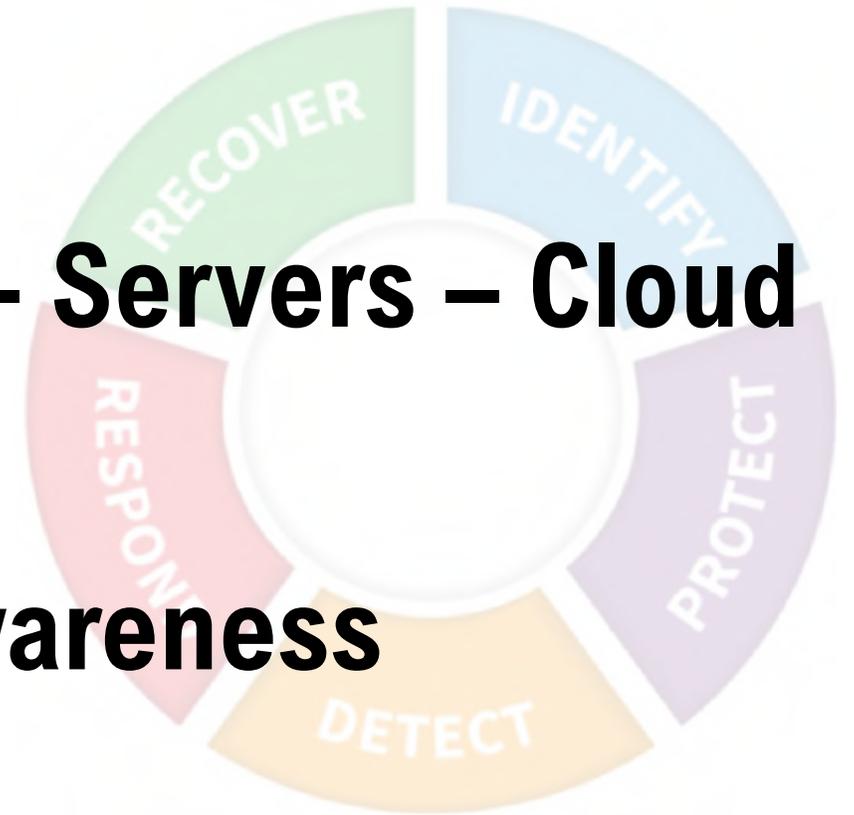
# Alaska's Cybersecurity Roadmap



# Alaska's Cybersecurity Roadmap

## • **Cybersecurity Framework**

- **Visibility is KEY - Endpoints – Servers – Cloud**
- **Patching Maturity**
- **Strengthen Cybersecurity Awareness**
- **Incident Response Maturity**



5 Yrs.

3 Yrs.

# Strategic Security Capability Alignment

## SOA Cybersecurity Roadmap

Roadmap Timeline	Past 6-9 Months	2022 Q4	2023	2024
<b>Identify</b>	Microsoft Endpoint Configuration Manager: Design and Build	Microsoft Endpoint Configuration Manager: Onboard SOA Endpoints	Asset Management and CMDB Integrations	
<b>Protect</b>	Defender for Endpoint: Onboard all SOA Workstations	Defender for Servers: Onboard all SOA Servers	Offline/Immutable backups for OIT hosted systems SOA WAN Segmentation Verified Trust	
<b>Detect</b>	24x7 SOC: Onboard MSSP 24x7 SOC	SIEM Tuning and Configuration Enterprise Log Collection Improvements Third-Party Monitoring: Onboarding BitSight	24x7 SOC: Evaluate MSSP SOC vs entirely SOA staffed SOC	
<b>Respond</b>	Establish CSIRT	IR Retainer Risk Management Cyber Self Insurance	Quarterly CSIRT Exercises	
<b>Recover</b>	IR and Recovery plan: Review and Updates	CISA Facilitated Ransomware Table Top Exercise		

# Security Transformation

## Modernization Pressures on Security

**ATTACKERS USING IDENTITY TACTICS**

**SECURING MODERN SCENARIOS (CLOUD, MOBILE, IOT)**

**Traditional Perimeter  
(Castle & Moat)**

**Identity and conditional  
Access**

# Hardening the Environment

**Traffic inspection**  
**Verified Trust Pilot**

**External and Internal  
Continuous Vulnerability  
Scanning**

**Multifactor  
Authentication**

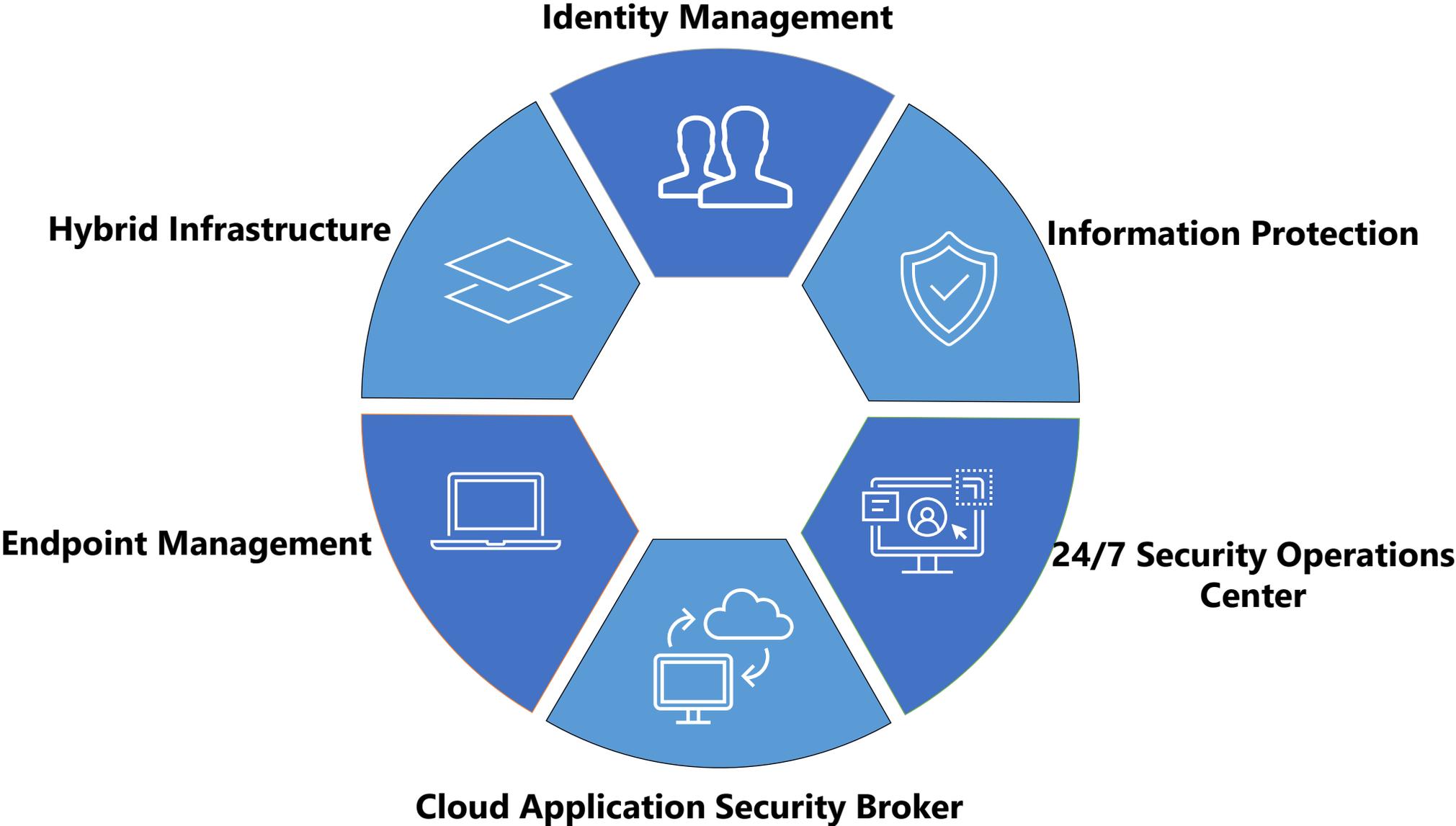


**Continuous  
Cyber Training**



**Critical Analysis of  
Technical Debt**

# Security Vendor Consolidation



# Future Security Posturing

## Modernization Pressures on Security

Identity Protection

Adopting Strategic Technologies

**PERIMETER BASED  
Network Controls**

**IDENTITY FIRST  
Conditional Access**



KKR

# KKR GLOBAL MACRO UPDATE

*HENRY H. MCVEY*

**NOVEMBER 2022**

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# All Our Macro and Portfolio Construction Work at KKR Suggests That We Are Entering a New Environment for Investing

There are several important structural forces at work that warrant investor attention at this time of heightened uncertainty

- 01 We are experiencing a regime change:** We are shifting from disinflation towards volatility in inflation, with a higher 'resting heart rate' for inflation. It is not just excess demand that drives our thinking; supply shocks are now more prevalent.
- 02 Asynchronous recovery: Rates are rising rapidly in the U.S. and Europe, but China and Japan have looser monetary policies.** We are also seeing a divide in the global economy between goods (slowing) and services (accelerating).
- 03 We are in an era of sustained, heightened geopolitical risks.** We are transitioning from benign globalization to one of great power competition. The importance of all things security-related will grow meaningfully.
- 04 The movement of the U.S. dollar is a key macro variable on which to focus.** With U.S. short rates possibly reaching five percent in 2023, financial conditions should tighten further as inflation eases by late 2023. As such, any sustained rally in risk assets will likely coincide with a peak in the U.S. dollar.
- 05 All of this requires a rethinking of asset allocation relative to the prior decade.** Diversification will matter more. Pacing will too. We advocate leaning into collateral-based cash flows, overweighting opportunistic vehicles across liquid/private markets, and owning more simple unit economics cash flow stories in Private Equity.

# We Remain Out of Consensus in Several Key Areas of the Global Markets

## Earnings per Share

- **We believe S&P 500 earnings per share will contract five percent** versus a consensus expectation of seven percent growth. At present, **74% of the S&P 500 is expected to have rising margins** in 2023.

## Oil

- We see **oil staying higher this cycle** relative to past slowdowns. In 2023, for example, we forecast \$95 per barrel versus consensus of \$81.

## Goods vs. Services

- **We forecast goods deflation in the U.S. in 2023, but expect further increases in services, food, and energy inflation. We expect inflation in the U.S. to reach 8.25% for 2022, falling to 'just' 4.8% in 2023.**

## Capital Markets

- **We are turning more positive.** With rates potentially peaking and stocks down 25%, our stance has become more bullish. How to navigate the environment? Keep it simple, including overweighting Credit.

# We See Lower Real GDP and Slowing Inflation in 2023

We remain steadfastly ahead of consensus on inflation, but largely behind consensus on growth expectations

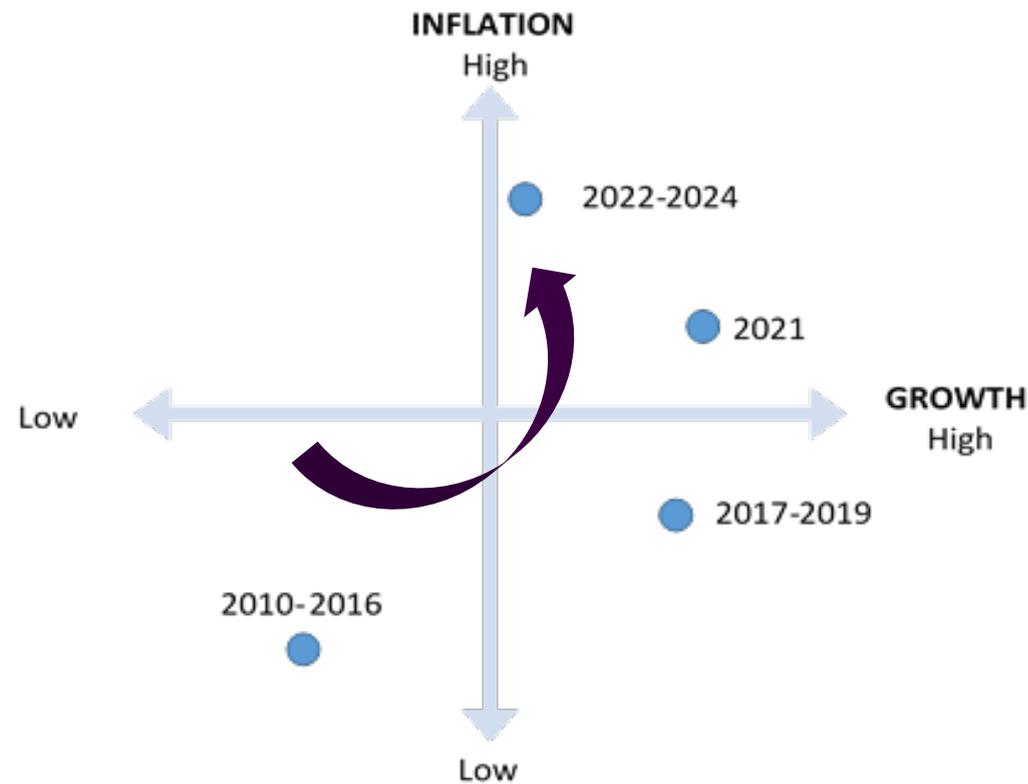
	2022e Real GDP Growth		2022e Inflation		2023e Real GDP Growth		2023e Inflation	
	GMAA New	Bloomberg Consensus	GMAA New	Bloomberg Consensus	GMAA New	Bloomberg Consensus	GMAA New	Bloomberg Consensus
U.S.	1.8%	1.6%	<b>8.1%</b>	8.0%	<b>0.5%</b>	0.7%	<b>4.5%</b>	3.8%
Euro Area	2.7%	3.0%	<b>8.4%</b>	8.2%	<b>(0.5%)</b>	0.2%	<b>5.5%</b>	5.1%
China	2.8%	3.3%	2.3%	2.3%	5.0%	5.0%	2.5%	2.3%

Note: U.S. GDP and inflation are under review. Data as at October 7, 2022. Source: Bloomberg., KKR GMAA analysis.

# We Believe We Have Entered a New Regime

We still see higher headline nominal GDP growth this cycle, but the underlying mix is increasingly shifting towards inflation relative to real growth. Expect more volatile inflation prints

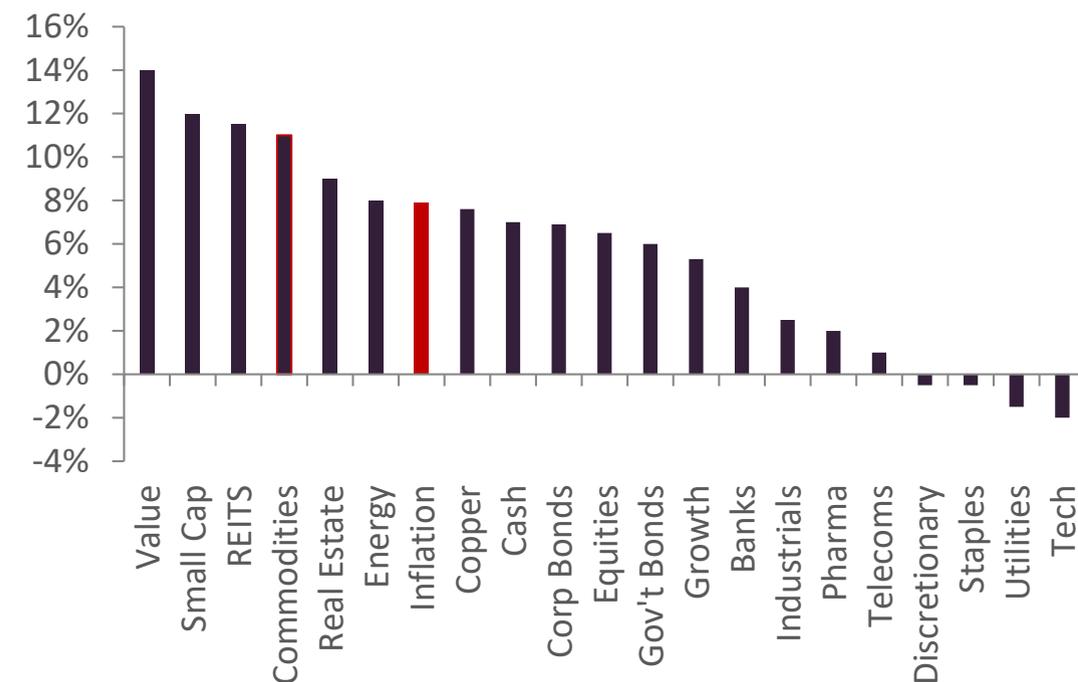
## A Regime Change Is Occurring



Data as at March 9, 2022. Source: KKR GMAA analysis.

## Defendable Margins Tend to Outperform in a Stagflation Environment

Cross-Asset & Equity Sector Annualized Total Returns, 1970s



Data as at March 2022. Source: BofA Global Investment Strategy.

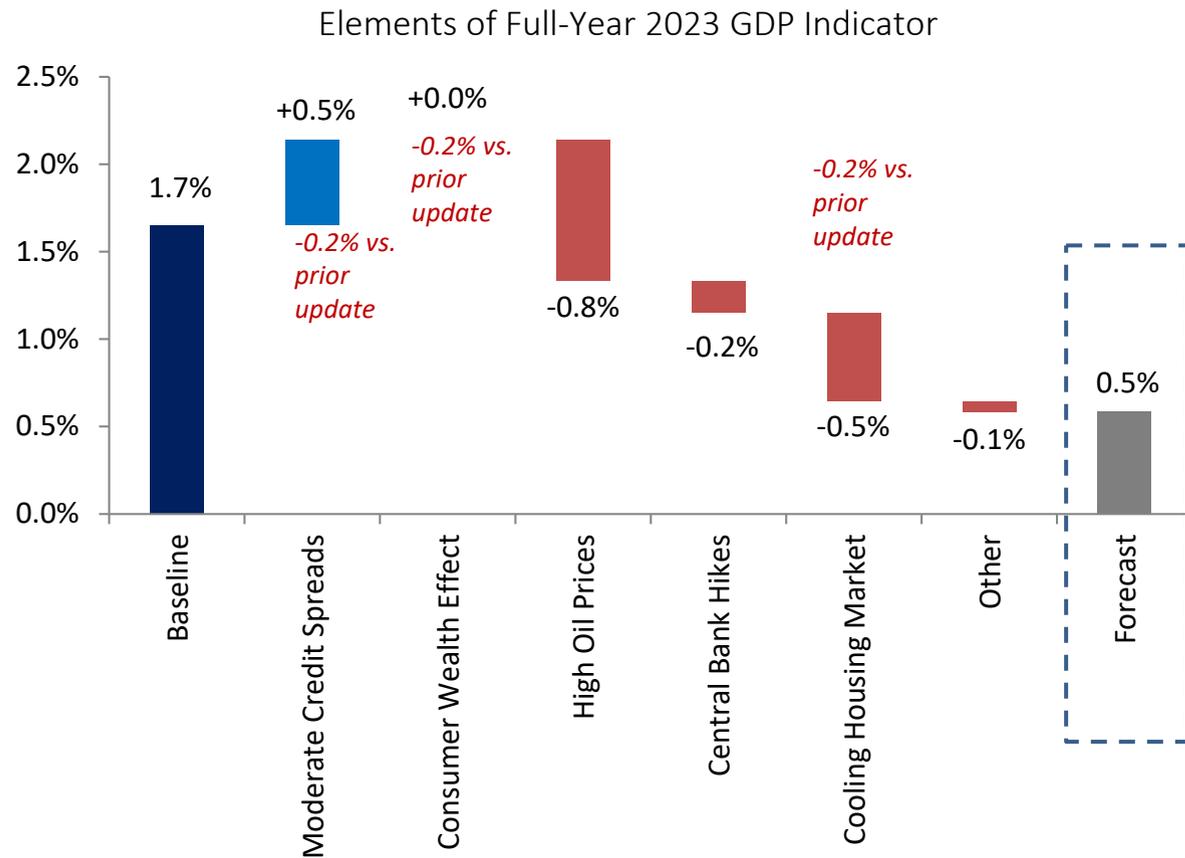
# We See 2023 Inflation Slowing, but Services, Wages, and Rental Income Keep Us Above Consensus

## Inflation Will Remain Elevated in 2023, Despite Goods Inflation Easing

	Year / Year Changes					Full-Year 2022e	Full-Year 2023e
	4Q22e	1Q23e	2Q23e	3Q23e	4Q23e		
<b>Headline CPI</b>	<b>7.5%</b>	<b>6.4%</b>	<b>4.5%</b>	<b>3.8%</b>	<b>3.3%</b>	<b>8.1%</b>	<b>4.5%</b>
Energy (8%)	16.0%	10.0%	-0.2%	2.8%	3.8%	26.3%	4.1%
Food (14%)	11.3%	10.4%	8.2%	6.1%	4.7%	10.1%	7.4%
<b>Core CPI (78%)</b>	<b>6.1%</b>	<b>5.3%</b>	<b>4.4%</b>	<b>3.5%</b>	<b>3.1%</b>	<b>6.2%</b>	<b>4.1%</b>
<b>Core Goods (21%)</b>	<b>3.9%</b>	<b>1.0%</b>	<b>-0.4%</b>	<b>-2.3%</b>	<b>-2.5%</b>	<b>7.8%</b>	<b>-1.1%</b>
<b>Core Services (57%)</b>	<b>7.0%</b>	<b>7.0%</b>	<b>6.2%</b>	<b>5.8%</b>	<b>5.2%</b>	<b>5.7%</b>	<b>6.0%</b>
Shelter, Hlth, & Ed. (42%)	6.5%	6.5%	6.0%	5.1%	4.4%	5.3%	5.5%
Other Core Services (15%)	8.1%	8.3%	6.8%	7.7%	7.4%	6.8%	7.6%

# USA: There Are a Variety of Factors Slowing Growth, Including a Cooling Housing Market and Surging Input Costs

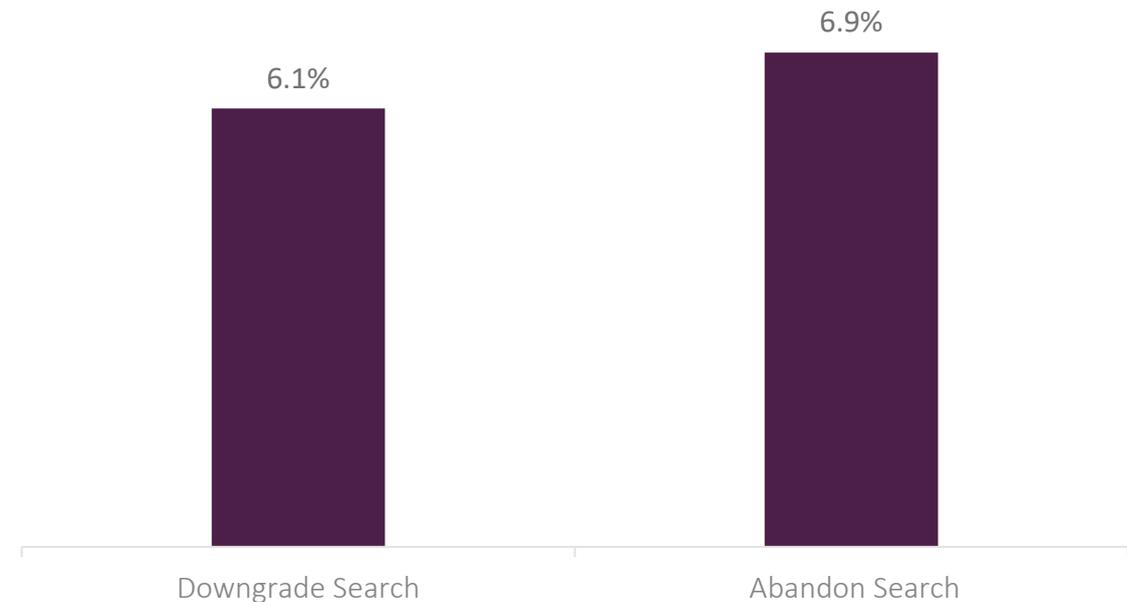
## A Cooling Housing Market Has Been a Drag on GDP



Data as at September 29, 2022. Source: KKR GMAA Analysis, Bloomberg

## Mortgage Rates Are At 6.93%, Slightly Above the Threshold Where Homebuyers Abandon Their Searches

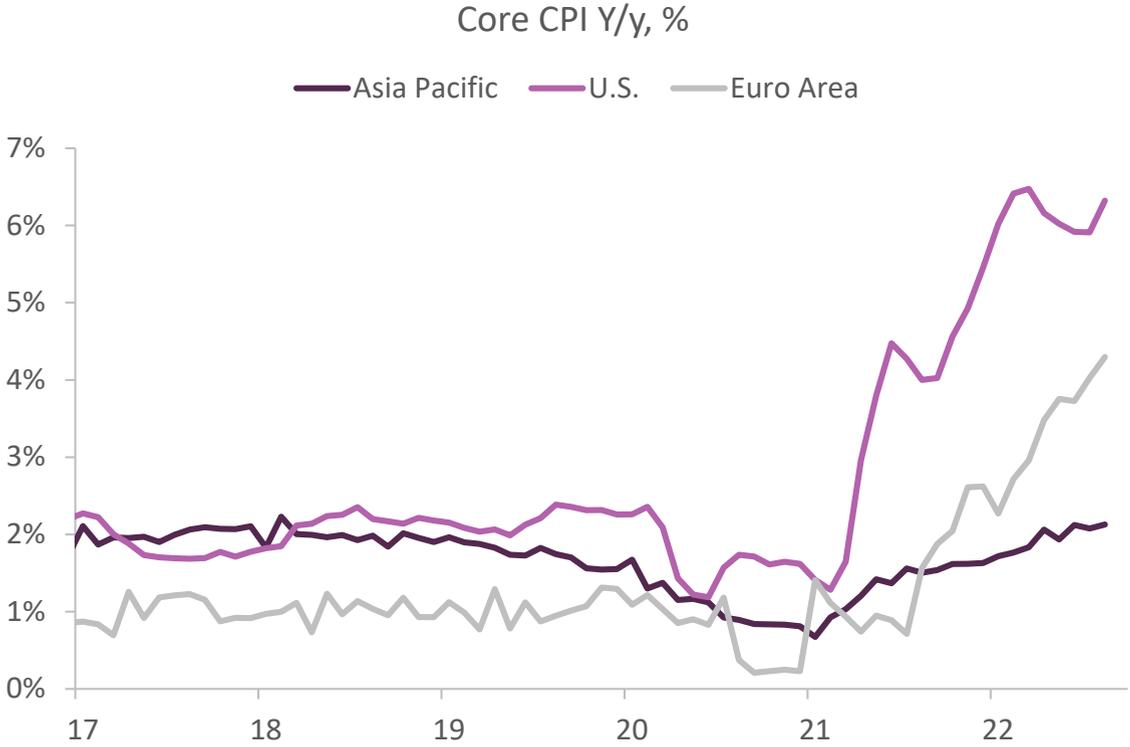
KKR 2022 Homebuyer Survey: Mortgage Rate at Which You Would...



Data as at November 15, 2022. Source: KKR Global Macro & Asset Allocation analysis, Bloomberg.

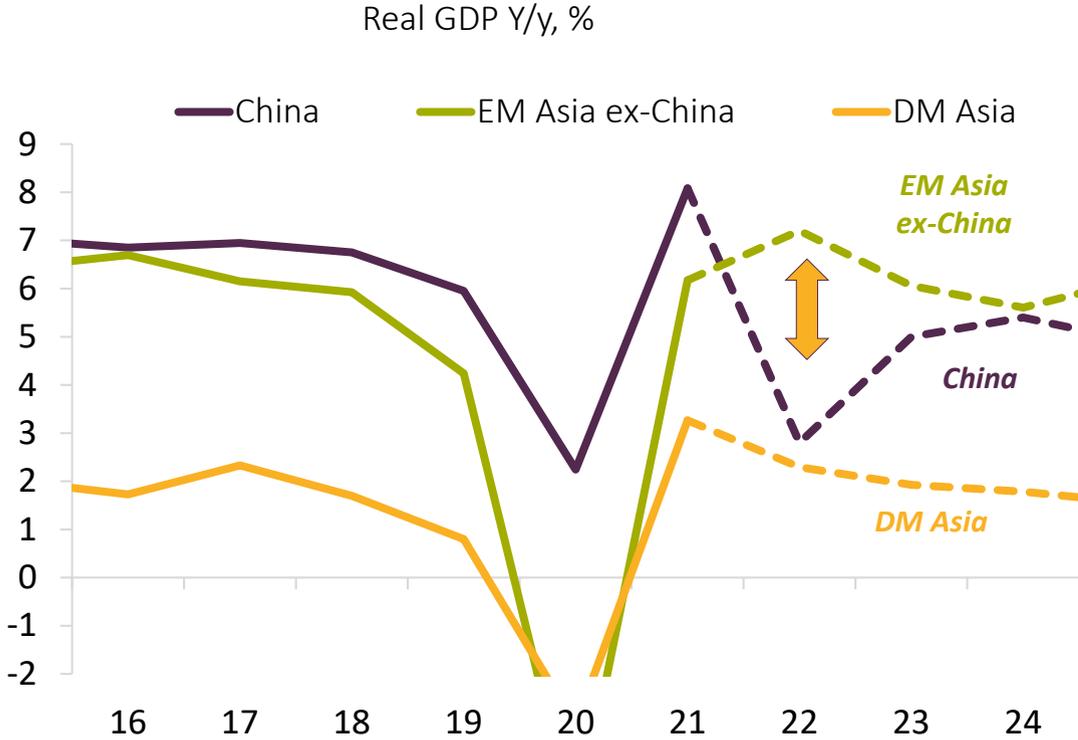
# Asia: A Better Story on Both Inflation and Growth

## Lower Inflationary Pressures Across Asia



Data as at September 30, 2022. Source: Haver, KKR Global Macro & Asset Allocation analysis.

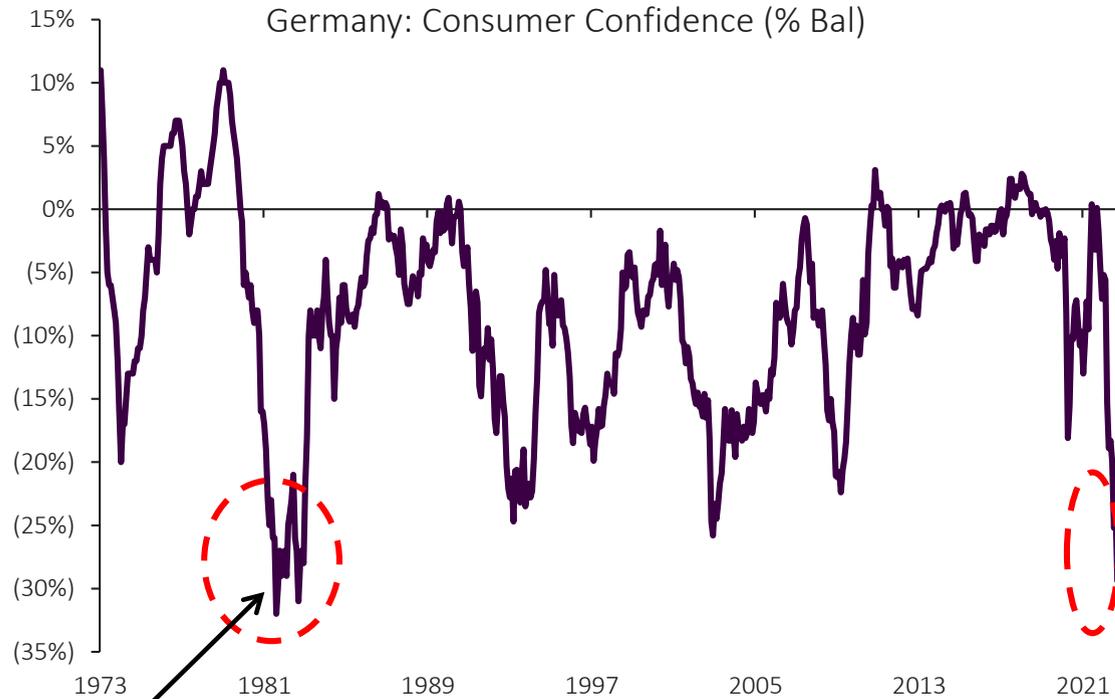
## Asia's Growth Now Bifurcated



As at Sep 30, 2022. KKR GMAA estimates China, IMF estimates for other Asia Pacific countries, nominal GDP weighted. Source: Haver, IMF, KKR GMAA analysis.

# Europe: Geopolitics and Inflationary Pressures Are Impacting Both Consumer and Corporate Expectations

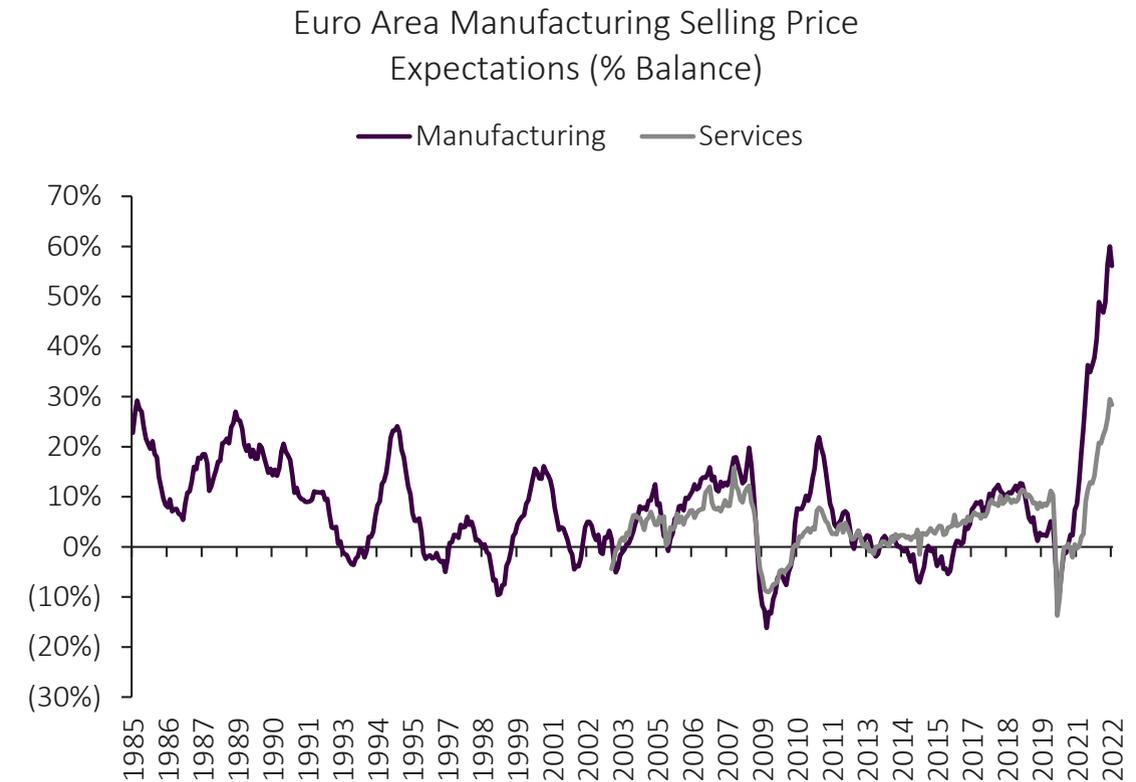
## Consumer Confidence in Europe Has Fallen to Previous Troughs



Second oil shock;  
Short-end rates  
reached 15% in  
the EZ

Source: European Commission, Statistical Office of the European Communities and OECD as of 6th Oct 2022.

## Inflationary Pressures Are Adversely Affecting Pricing Expectations

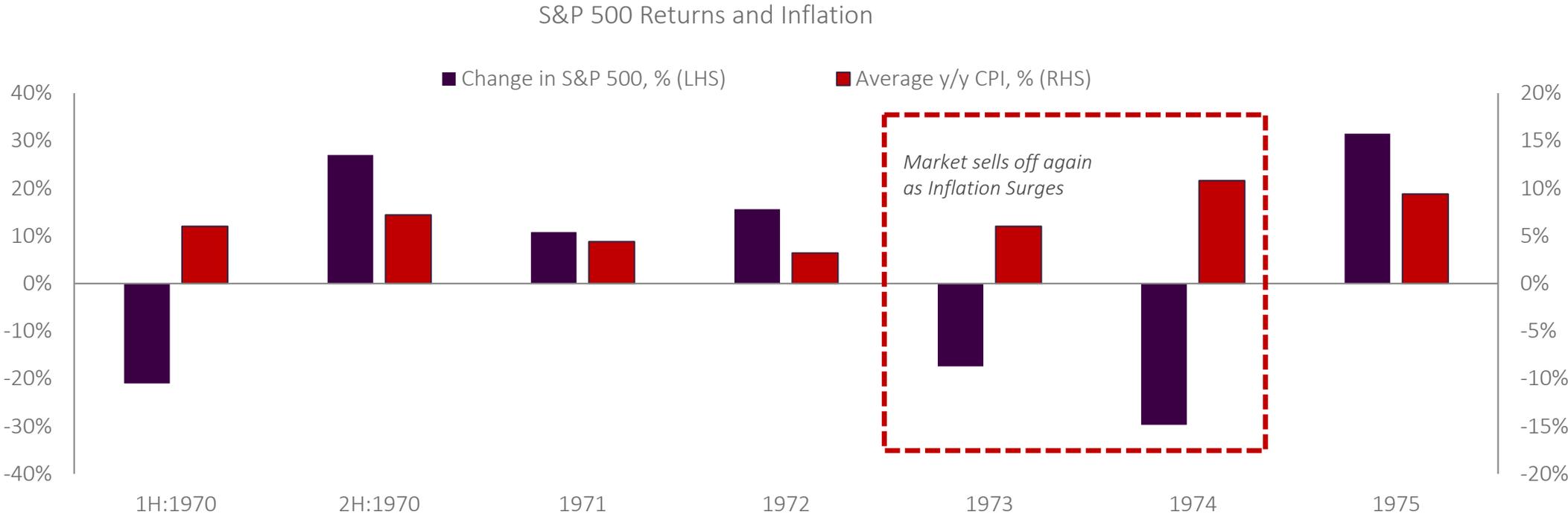


Data as at September 9, 2022. Source: Bloomberg.

# If History Is Any Guide, Expect More Volatility Along the Way

History shows us that even inflationary periods can have periods of falling inflation, a backdrop that often produces sharp upward reversals in Equities

## Equities Rallied in the Second Half of 1970 – Until Inflation Came Back with a Vengeance

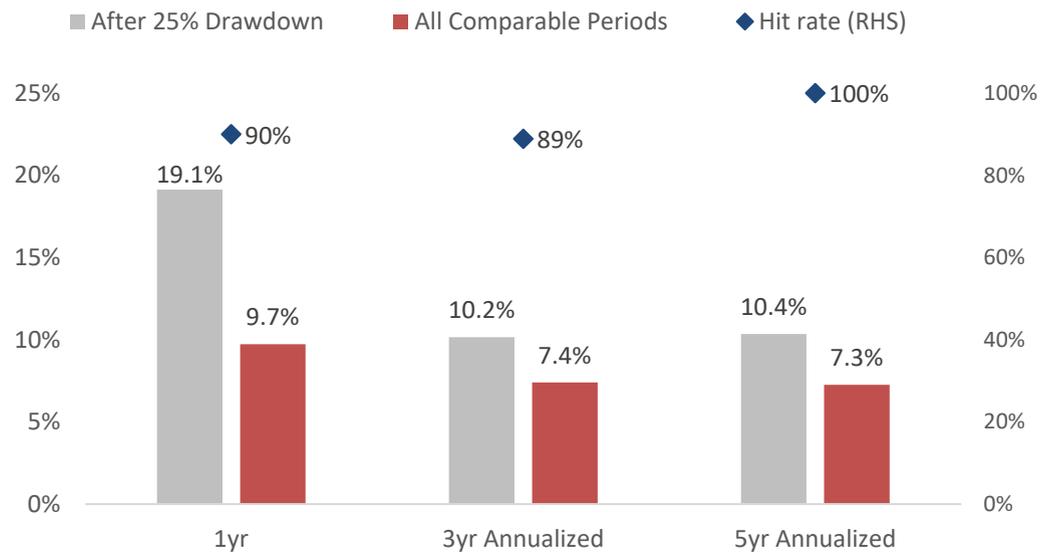


Data as at December 31, 2021. Source: Census Bureau, Haver Analytics, KKR Global Macro & Asset Allocation analysis.

# Downturns Are To Be Bought, Not Sold

## The Hit Rate After a 25% or More Drawdown Approaches 90-100%

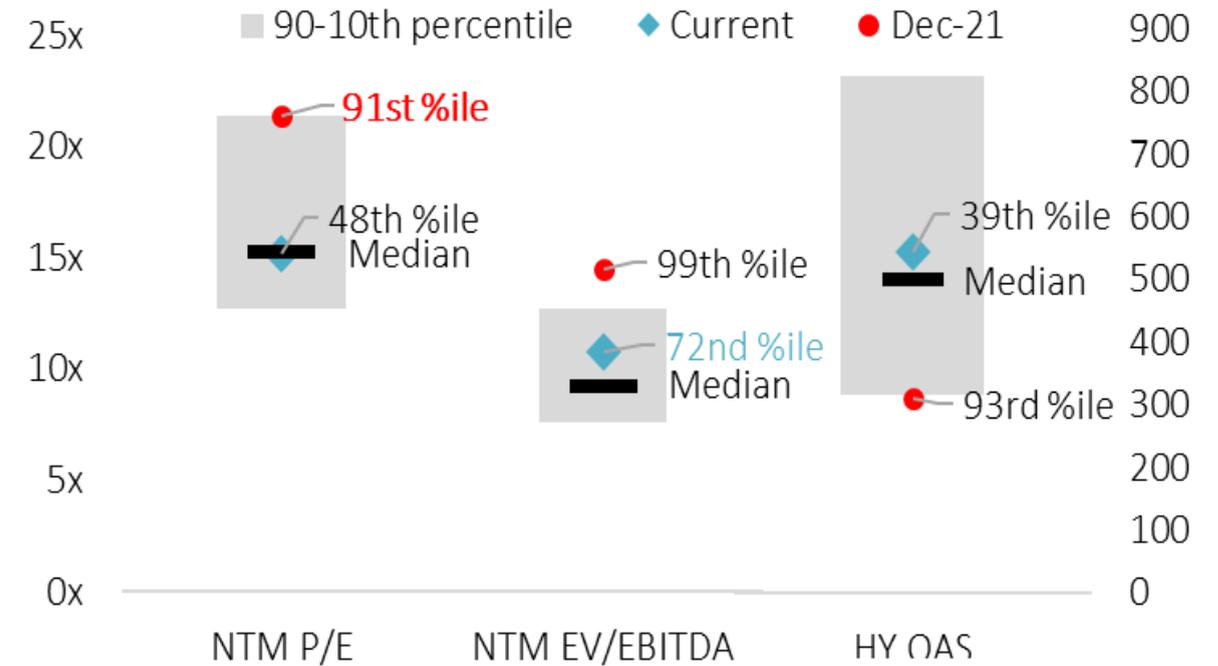
Median S&P 500 Price Return After >25% Drawdown  
(Based on 10 Drawdowns Since 1940)



Note: 3-year and 5-year annualized returns are based on nine episodes only since the 2020 drawdown was too recent. Data as at September 30, 2022. Source: Bloomberg.

## Equity Multiples Remain Elevated vs History, Whereas Credit Valuation Looks More Fairly Valued

S&P 500 Valuations vs HY Credit Spreads

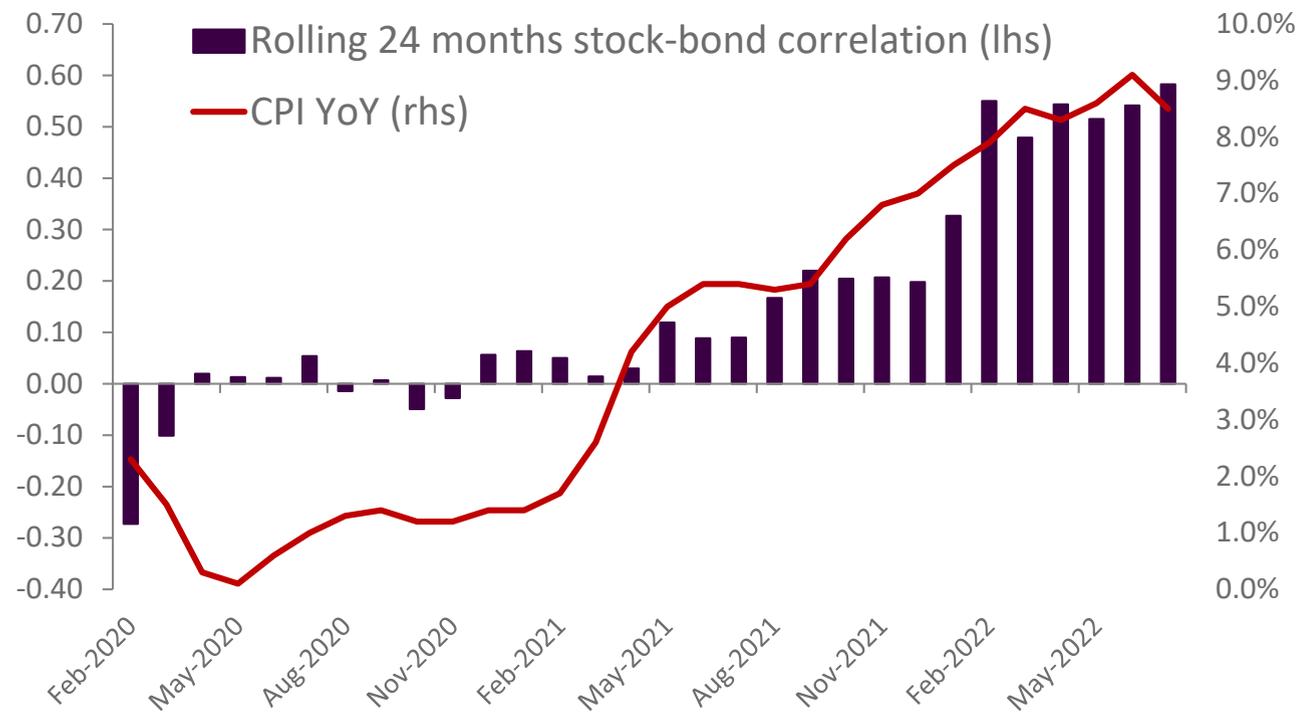


HY OAS is ICE BofA U.S. High Yield Index. Data as at 1Q90 to August 31, 2022. Source: Bloomberg.

# Bigger Picture: We Believe A Different Approach to Asset Allocation Is Required

The traditional stock/bond correlation has reversed in a higher inflation environment

## The Relationship Between Stocks and Bonds Is Changing in This Inflationary Environment



Data as at August 31, 2022. Source: Bloomberg.

## The 40/30/30, Which Includes Private Markets Assets, Outperforms the Traditional '60/40' On A Risk-Adjusted Nominal Return Basis In Almost All Environments

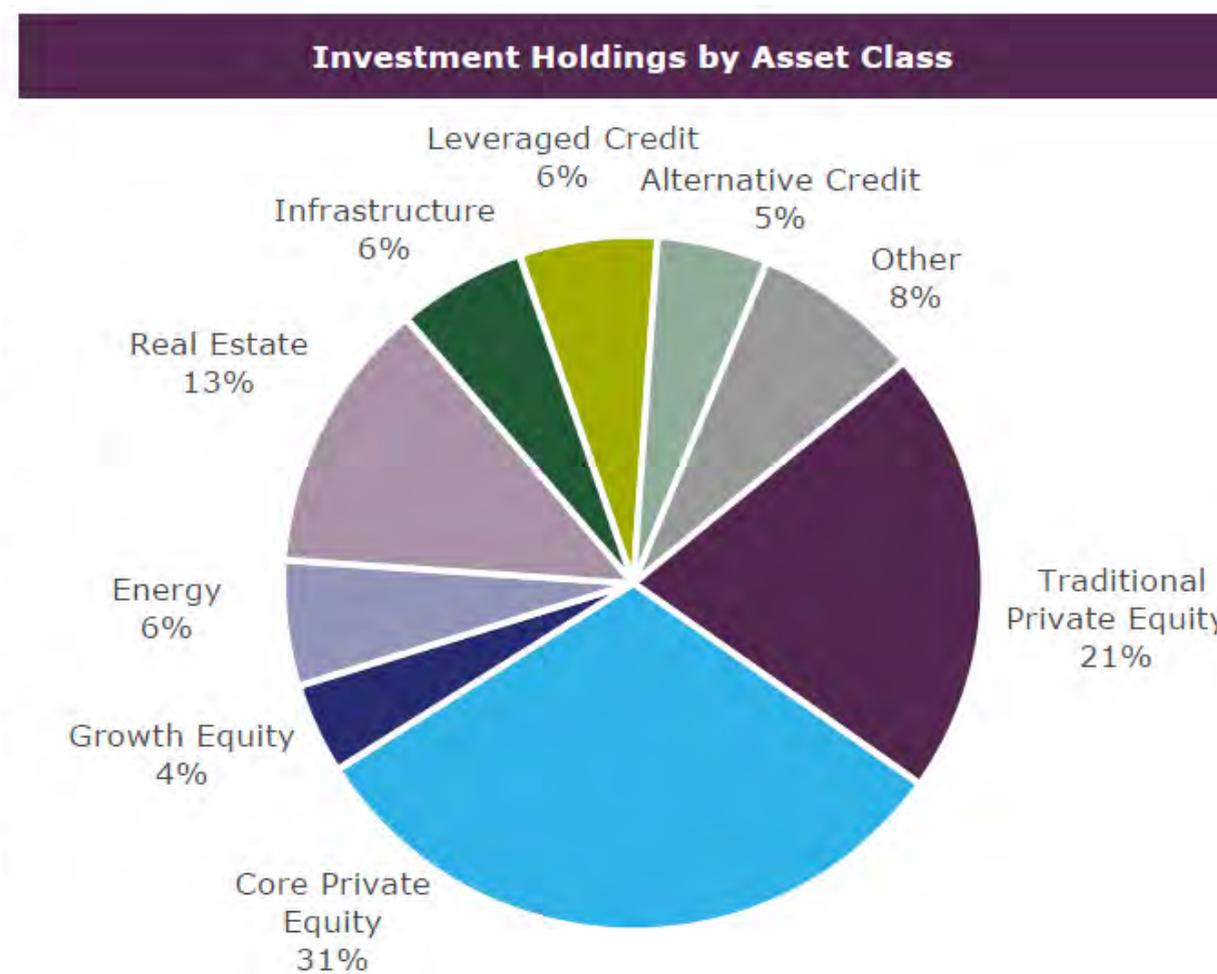
	All Periods		High Inflation		Low Inflation	
	60/40	40/30/30	60/40	40/30/30	60/40	40/30/30
<b>Return</b>	9.3%	9.6%	1.5%	4.3%	11.0%	10.5%
<b>Volatility</b>	12.7%	9.6%	12.5%	8.8%	11.5%	9.1%
<b>Sharpe Ratio</b>	0.73	1.00	0.12	0.49	0.96	1.16

We have added Infrastructure, Real Estate, and Private Credit to the 60/40 to make it a 40/30/30

Data as at December 31, 2021. Source: Bloomberg, KKR GMAA analysis.

# Balance Sheet Investments Detail

(\$ in millions)	2Q'22
<b>Investments</b>	<b>Fair Value</b>
Traditional Private Equity	\$ 3,564
Core Private Equity	5,353
Growth Equity	726
<b>Private Equity Total</b>	<b>9,643</b>
Energy	1,001
Real Estate	2,182
Infrastructure	1,018
<b>Real Assets Total</b>	<b>4,201</b>
Leveraged Credit	1,095
Alternative Credit	881
<b>Credit Total</b>	<b>1,976</b>
Other	1,339
<b>Total Investments</b>	<b>\$ 17,159</b>



# Pathway Capital Management

**Mandate:** Private Equity

**Hired:** 2002

Firm Information	Investment Approach	Total ARMB Mandate
<p>Founded in 1991, Pathway creates and manages private equity separate accounts and funds of funds for institutional investors. Pathway manages capital on behalf of some of the largest corporate and public pension plans, government entities, and financial institutions around the globe. The firm's assets under management are \$90 billion as of 06/30/2022.</p> <p>Pathway is registered as an investment advisor with the SEC in the United States and as a portfolio manager and exempt market dealer in Ontario, Quebec, and Saskatchewan, Canada. Pathway's wholly owned UK subsidiary is regulated in the UK by the Financial Services Authority. Pathway's wholly owned Hong Kong subsidiary is regulated in Hong Kong by the Securities and Futures Commission.</p> <p><b>Key Executives:</b>            Jim Chambliss, Managing Director            Canyon Lew, Managing Director            Wyatt Geiger, Sr. Vice President</p>	<p>Pathway is extremely selective in choosing private equity investment funds. Every partnership must meet rigid standards regarding the overall quality of the investment opportunity, such as:</p> <ul style="list-style-type: none"> <li>▪ Target markets that can support private equity investing</li> <li>▪ Long-term and proven private equity business model</li> <li>▪ Stable management team operating under a consistent firm culture</li> <li>▪ Proven access to high-quality investment opportunities and resources</li> <li>▪ Strong track record</li> </ul> <p>Pathway's decision-making process uses a team approach; no one individual has authority to make decisions regarding portfolio management without the input of other senior professionals.</p> <p>Final investment decisions are made by the Investment Committee comprised of three senior managing directors and nine managing directors.</p> <p><b>Benchmark:</b> 1/3 S&amp;P 500, 1/3 Russell 2000, 1/3 MSCI EAFE +200 basis points and the Cambridge vintage year peer comparison.</p>	<p><b>Assets Under Management: 06/30/2022</b>            Market Value: \$2,040 million</p>

**Concerns:** None

## Performance

The since inception internal rate of return (IRR) for ARMB's Pathway portfolio is 15.6% through 06/30/2022, which compares favorably against the public market equivalent return of ARMB's blended benchmark (1/3 S&P 500, 1/3 Russell 2000, 1/3 MSCI EAFE) of 8.2%.

ARMB's portfolio managed by Pathway has outperformed the Cambridge median over all vintage years with two vintage years in the top quartile and 17 in the second quartile when compared against the Cambridge database for vintage years 2001-2019.

Presentation Prepared For

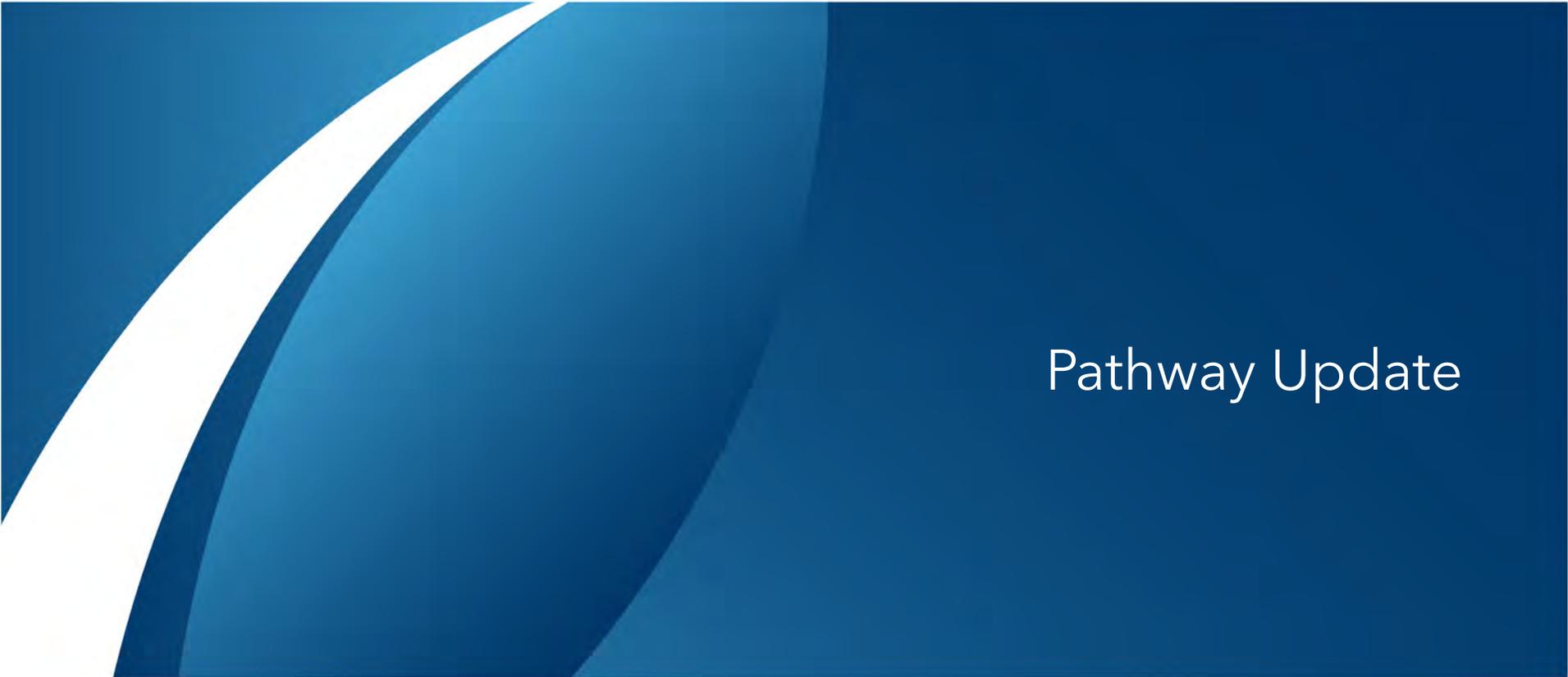
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# Alaska Retirement Management Board

DECEMBER 2022



- Pathway Update
- Private Market Environment
- Portfolio Update
- Appendix



# Pathway Update



# Pathway at a Glance



PRIVATE MARKET SPECTRUM		GLOBAL REACH		FULL-SERVICE MODEL
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**1991**  
Founded

**100%**  
owned by its  
23 partners

**220**  
Staff

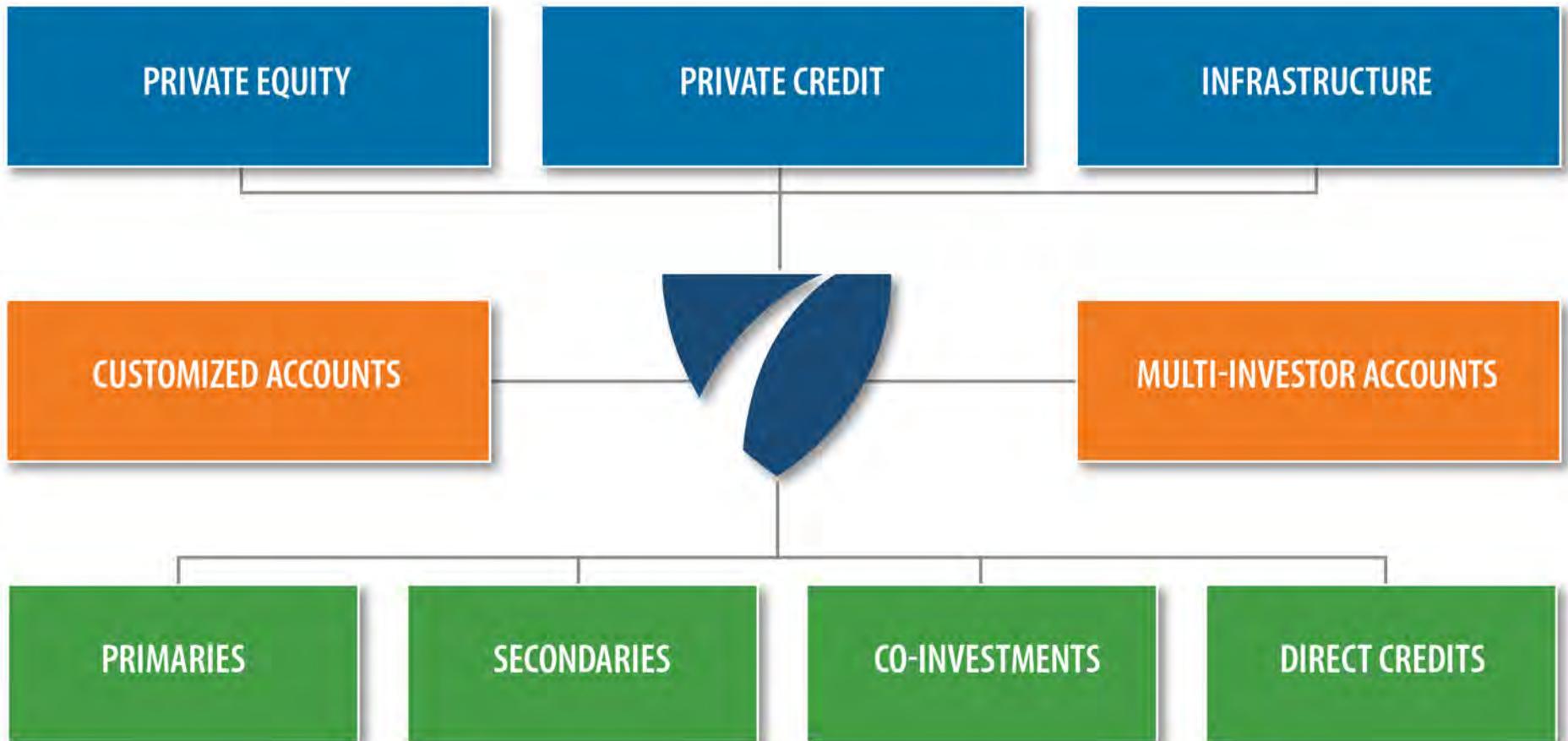
**>\$85 billion**  
in global AUM<sup>b</sup>

**22 years'**  
average investment  
experience<sup>c</sup>

<sup>a</sup>Strategic alliance with Tokio Marine Asset Management. <sup>b</sup>Represents roll-forward market value plus undrawn capital as of September 30, 2022. <sup>c</sup>Represents Pathway's 21 investment partners.



## Global Provider of Private Market Solutions





## Representative Investor List

Pathway carefully manages growth with an emphasis on building long-term relationships.

7-G's Investment Group  
 AAA Northern California, Nevada & Utah Insurance Exchange  
 Alaska Permanent Fund Corporation  
**Alaska Retirement Management Board**  
 Anthem, Inc.  
 BB&T Corporation Pension Plan Trust  
 Beckman Research Institute of the City of Hope  
 Bristol-Myers Squibb Master Trust  
 BWXT Master Trust  
 The Carl and Roberta Deutsch Foundation  
 Concordia Retirement Plan  
 Dow Employees' Pension Plan Trust  
 East Riding Pension Fund  
 Employers Mutual Casualty Company  
 HighGround Advisors  
 HSBC Bank Pension Trust (UK) Limited  
 Hydro One Pension Fund  
 International Staff Pension Corporation  
 Iowa Public Employees' Retirement System  
 J.C. Penney Corporation, Inc. Pension Plan Trust  
 The John Randolph Haynes and Dora Haynes Foundation  
 Kroger Master Retirement Trust  
 The Larry L. Hillblom Foundation



Lloyds Bank Pension Trust  
 Los Angeles County Employees Retirement Association  
 Marin County Employees' Retirement Association  
 Mississippi Public Employees' Retirement System  
 Nebraska Investment Council  
 Nevada Public Employees' Retirement System  
 North Slope Borough  
 Ohio Public Employees Retirement System  
 Oregon Public Employees Retirement Fund  
 PPL Services Corporation Master Trust  
 PPL Energy Supply, LLC Master Trust  
 The Public School and the Public Education ERS of Missouri  
 Royal Bank of Scotland Group Pension Fund  
 San Bernardino County Employees' Retirement Association  
 San Jose Federated City Employees' Retirement System  
 San Luis Obispo County Pension Trust  
 Schlumberger Master Pension Trust  
 Singapore Institute of Technology  
 Tennessee Consolidated Retirement System  
 Tokio Marine & Nichido Fire Insurance Co., Limited  
 Tulare County Employees' Retirement Association  
 UFCW Consolidated Pension Fund  
 University of Nevada, Las Vegas Foundation

NOTE: This list comprises clients/investors with assets of \$5.0 million or more (roll-forward market value plus undrawn capital) under Pathway's management; these assets collectively represent more than 90% of Pathway's total assets under management. The list excludes clients/investors that requested not to be named or that have a policy prohibiting being named, as well as all Japan-based investors, other than Tokio Marine and Nichido Fire Insurance Co., Ltd. Pathway has not used performance-based criteria to determine which clients/investors to include in this list. It is not known whether the clients/investors listed above approve or disapprove of Pathway or its services.



# Organizational Chart

## Investment Team

<b>Douglas K. Le Bon</b> Senior Managing Director	<b>James H. Reinhardt</b> Senior Managing Director	<b>Karen J. Jakobi</b> Senior Managing Director	<b>Alex M. Casbolt†</b> Managing Director	<b>James R. Chambliss</b> Managing Director	<b>Vincent P. Dee, CFA</b> Managing Director	<b>Jason C. Jenkins, CFA</b> Managing Director	
<b>Simon Y.S. Lau†</b> Managing Director	<b>Canyon J. Lew</b> Managing Director	<b>Matthew M. Lugar*</b> Managing Director	<b>Richard S. Mazer</b> Managing Director	<b>Terrence G. Melican</b> Managing Director	<b>Derrek I. Ransford, CFA</b> Managing Director	<b>Valerie A. Ruddick</b> Managing Director	
<b>Wayne D. Smith, CFA*</b> Managing Director	<b>Pete Veravanich</b> Managing Director	<b>Stefan Goettl†</b> Director	<b>Bryan P. Nelson, CFA</b> Director	<b>John T. Ruggieri, CFA*</b> Director	<b>Mikael Sand, CFA†</b> Director	<b>Nicholas J. Siemsen, CFA</b> Director	
<b>Kevin W. Bland</b> Principal	<b>Jeffrey L. Buress*</b> Principal	<b>Mitchell T. Clemente</b> Principal	<b>Justin C. Maney, CFA</b> Principal	<b>Jason K. Yu†</b> Principal	<b>Paul J. de Groot, CFA</b> Sr. Vice President	<b>Adam A. Belkairous</b> Sr. Vice President	<b>Brenton W. Croteau</b> Sr. Vice President
<b>Wyatt H. Geiger, CFA</b> Sr. Vice President	<b>Blessie Hwang, CFA</b> Sr. Vice President	<b>Veronica Norton†</b> Sr. Vice President	<b>Gina Park</b> Sr. Vice President	<b>Brett W. Richardson, CFA†</b> Sr. Vice President	<b>Matthew R. Spader*</b> Sr. Vice President	<b>Jean-François L. Casanova†</b> Vice President	<b>Nicholas R. Faulkner</b> Vice President
<b>Taylor V. Pijl</b> Vice President	<b>Jack Pong†</b> Vice President	<b>Hunain Riaz</b> Vice President	<b>Hiral G. Savani, CPA</b> Vice President	<b>Melanie Z. McKinley</b> Vice President—Investment Closing	<b>Timothy D. Berry, CFA, CAIA</b> Associate	<b>John T. Carpenter</b> Associate	<b>Jingyi Chang†</b> Associate
<b>Ross D. Hooper</b> Associate	<b>Dillon E. Jalbert*</b> Associate	<b>Jun Tae Park†</b> Associate	<b>Cameron T. Rinn*</b> Associate	<b>William A. Belmont*</b> Sr. Investment Analyst	<b>Joseph R. Hegan†</b> Sr. Investment Analyst	<b>Andrew J. Vanderschans</b> Sr. Investment Analyst	<b>Timothy An</b> Investment Analyst
<b>Kevin Bays</b> Investment Analyst	<b>Mathias Burban†</b> Investment Analyst	<b>Richard C. Chow</b> Investment Analyst	<b>Noah Conlon</b> Investment Analyst	<b>Paul Isoko†</b> Investment Analyst	<b>Reid Johns</b> Investment Analyst	<b>Kelly Lau†</b> Investment Analyst	<b>Thomas R. McCarthy</b> Investment Analyst
<b>Spencer Marocchini*</b> Investment Analyst	<b>Emily K. Moy*</b> Investment Analyst	<b>Dev Pant</b> Investment Analyst	<b>Jack Peterson</b> Investment Analyst	<b>Timothy Pham</b> Investment Analyst	<b>Alfred Poon†</b> Investment Analyst	<b>Jonas C. Schultz*</b> Investment Analyst	<b>John Shepherd</b> Investment Analyst
<b>Haileeyesus Tiruneh</b> Investment Analyst	<b>Amelie Zhang†</b> Investment Analyst	<b>Spencer M. Knight</b> Monitoring Analyst	<b>Ursula Auger</b> Closing Specialist	<b>Heidi Jauregui</b> Closing Specialist			

### Client Services

<b>Gerard R. Branka*</b> Sr. Vice President	<b>Ben Dreyer†</b> Sr. Vice President	<b>Ed Hoffman, CFA, FRM</b> Sr. Vice President
<b>Andrea Mack, CFA*</b> Sr. Vice President—Head of Consultant Relations 9 Staff	<b>Martin J. Wing, CAIA</b> Sr. Vice President—Consultant Relations	

### Legal

<b>Ashok K. Tripathi, Esq.</b> Sr. Vice President & General Counsel 8 Staff
---

### Corporate Accounting, Fund Accounting & Tax

<b>Curtis P. Gerlach, CPA (inactive)</b> Director & CFO 71 Staff
--

### Compliance/ ESG

<b>Milt M. Best, CFA</b> Director & CCO 6 Staff
---

### Risk Management

<b>John Reynolds</b> Sr. Vice President 1 Staff
---

### Systems Administration

<b>Brian M. Leyran</b> Vice President—Systems Administration 7 Staff
--

### Software Development

<b>Michael C. Long</b> Sr. Vice President—Software Development 7 Staff
--

### Editorial & Production

<b>Christopher M. Lopez</b> Editor & Production Manager 5 Staff
---

### HR & Admin.

<b>David J. Tosches</b> Sr. Vice President of HR 31 Staff
---

NOTE: Bold type denotes Pathway partners. \*Rhode Island staff. †London staff. ‡Hong Kong staff.



## ARMB and Pathway

A Partnership Spanning Two Decades:



## ARMB Portfolio Highlights:<sup>a</sup>



<sup>a</sup>As of October 31, 2022.

<sup>b</sup>As of June 30, 2022.

<sup>c</sup>Based on Burgiss Private i global all private equity return benchmarks, as of June 30, 2022, as produced using Burgiss data.



# Private Market Environment



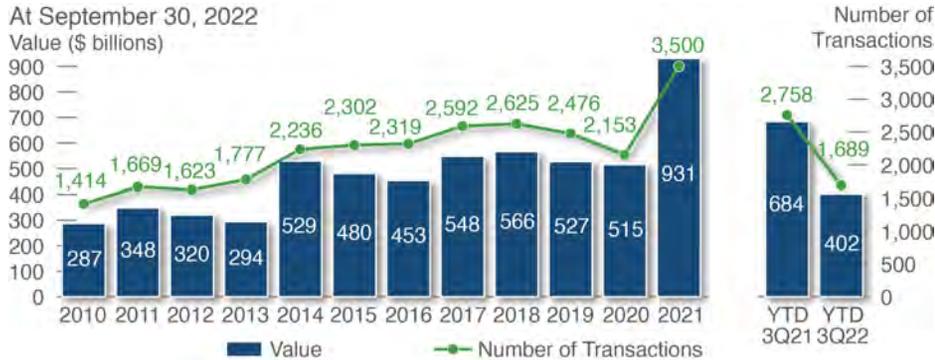
### Overview

- Market volatility has increased significantly since the second quarter of 2022, driven by inflation, rising interest rates, heightened geopolitical risks, and an uncertain economic outlook, which caused steep losses in public markets globally.
- Buyout activity YTD 3Q22 has declined well below the pace of 2021. Restrictive credit market conditions, volatility, and an uncertain pricing environment have adversely impacted investment activity.
  - U.S. and European buyout activity fell 36% and 53%, respectively, in 3Q22 compared with the prior quarter.
- Exit market activity has slowed considerably YTD 3Q22.
  - IPO markets are largely closed as a result of market volatility and poor aftermarket performance from recent listings.
  - M&A exit activity declined by 41% relative to 2021 but remains in line with YTD activity over the past 5 years.
- Default rates and indicators of distress remain at relatively low levels. To date, corporate earnings and balance sheets remain healthy overall but are susceptible to an economic downturn.
- Venture capital investment activity remained resilient throughout much of 2022 but slowed in 3Q22; there are signs that the valuation environment has changed since 2021, particularly for later-stage companies.
- Private equity fundraising remains in line with 2021 but has been driven by mega funds. Market uncertainty and limited partner allocation capacity have driven a “flight to quality.”



# Private Equity Market Summary

## GLOBAL PE-BACKED M&A EXIT ACTIVITY



SOURCE: Mergermarket.

## U.S. BUYOUT INVESTMENT ACTIVITY



SOURCE: Refinitiv, S&P LCD, and Pathway Research.

NOTE: Amounts may not foot due to rounding.

<sup>a</sup>Average PPM (as a multiple of trailing EBITDA) of all LBOs.

## U.S. VENTURE CAPITAL INVESTMENT ACTIVITY



SOURCE: Pitchbook NVCA Venture Monitor Report.

## WORLDWIDE PRIVATE EQUITY FUNDRAISING—BY STRATEGY



SOURCE: Refinitiv and Pathway Research.

NOTES: Fundraising amounts are based on net amounts raised, which are adjusted for fund-size reductions. Amounts may not foot due to rounding.

<sup>a</sup>Comprises generalist, special situations, and other fund strategies not classified as buyout-, venture capital-, distressed-, or energy-focused.



## Looking Forward

- Capital markets are expected to remain volatile during 2022 due to concerns over rising inflation, continued supply chain constraints, Russia's invasion of Ukraine, and interest rate hikes in the U.S.
- The pandemic has highlighted the durable nature of the private equity model and the asset class's ability to respond to market shocks, capitalize on opportunities, and generate attractive returns for investors.
  - Private markets continue to outperform public equity benchmarks over short- and long-term horizons.
- Investment activity has slowed from the record pace of 2021, but general partners have continued to find attractive areas to deploy capital.
  - Take-private buyouts have been particularly relevant in the large-cap segment in 2022.
  - Private credit managers have helped fill the void left by constrained leveraged loan and high-yield bond markets.
- Declines in public markets are expected to continue to negatively impact private equity valuations and performance over coming quarters; however, the magnitude of that impact remains unclear.
  - Underlying business fundamentals remain healthy in most segments of the economy.
- The uncertain global macroeconomic outlook presents both challenges and opportunities for private equity firms.



# Portfolio Update



## 2022 Tactical Plan Review

At October 31, 2022

	2022 Plan	Actual to Date
Commitments	\$235 million	\$224.0 million
Number of Investments	Up to 24 partnerships and up to 22 co-investments	21 primary partnerships, 18 co-investments, and 1 secondary
Size of Investments	\$10–\$15 million (primaries)	\$10.5 million avg. commitment <sup>a</sup>
Investment Strategies	Buyouts, Venture Capital, Special Situations, Restructuring, and Co-investments	Buyouts (13), Venture Capital (5), Special Situations (4), Co-investments (18)

Strategy	2022 Plan		Commitments to Date <sup>a</sup>	
	No. of Invs.	Targeted Commitments (\$MM)	No. of Invs.	Commitments (\$MM)
Buyouts	Up to 14	Up to 125	13	100.5
Venture Capital	Up to 10	Up to 100	5	41.0
Special Situations	Up to 10	Up to 100	4	49.0
Co-investments	Up to 22	Up to 35	18 <sup>b</sup>	33.4
<b>Total</b>		<b>Up to 235</b>	<b>40</b>	<b>224.0</b>

NOTE: Amounts may not foot due to rounding.

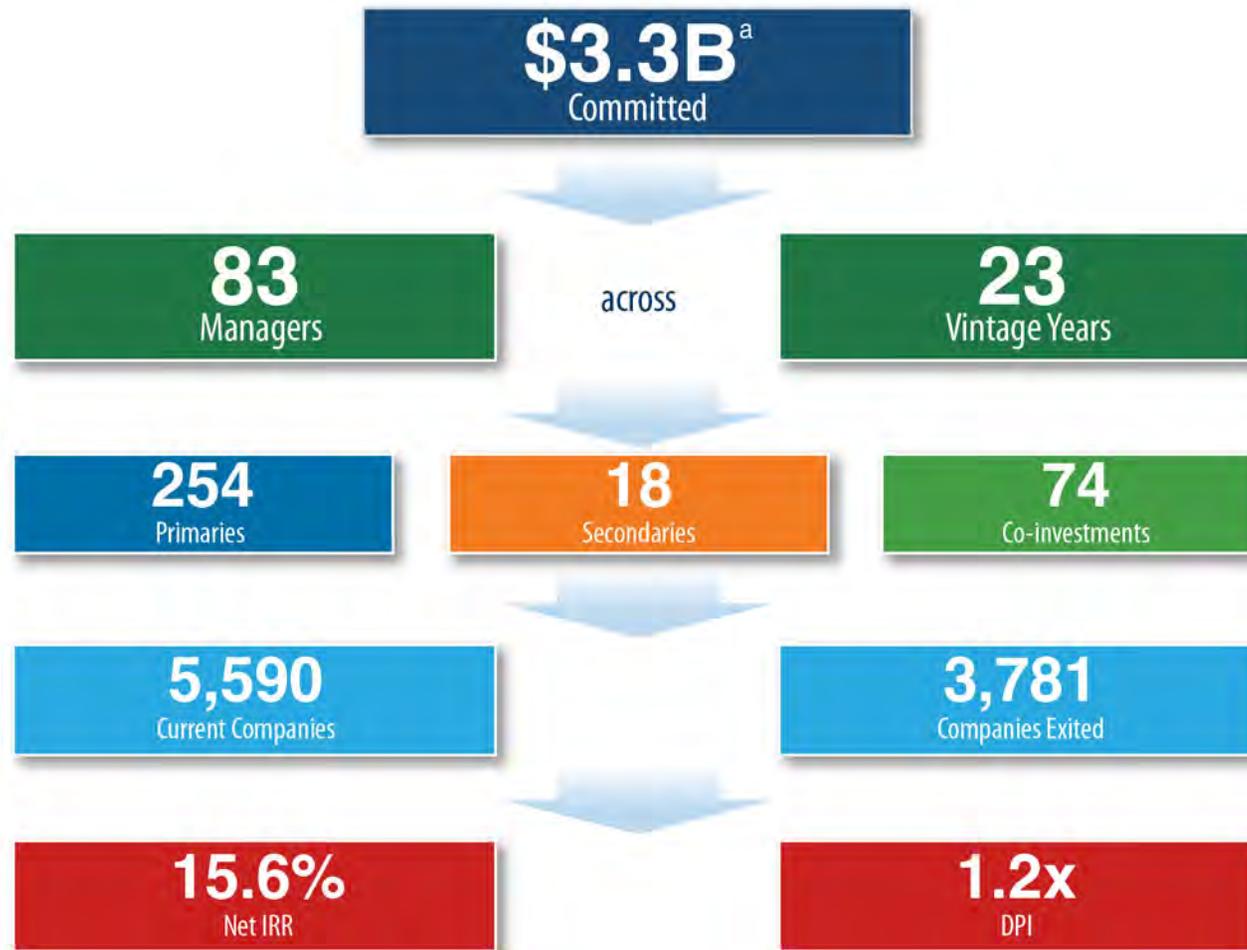
<sup>a</sup>Excludes secondary partnership interests and co-investments. Combines aggregate primary commitments split across multiple fund strategies raised by one general partner.

<sup>b</sup>Includes follow-on co-investment commitments.



## Portfolio Overview

At June 30, 2022



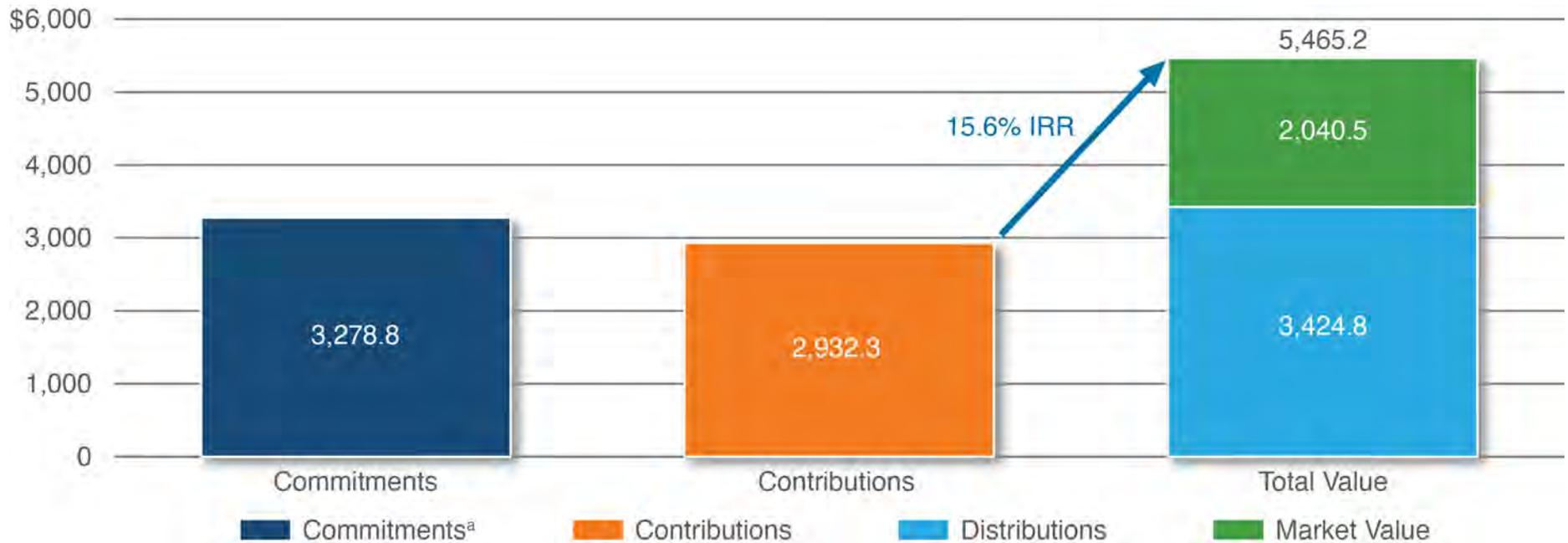
<sup>a</sup>Commitments to non-USD-denominated investments are accounted for by multiplying unfunded commitments by the most recent quarter-ending exchange rate, then adding the result to cumulative capital contributions, causing commitments to non-USD-denominated investments to fluctuate quarterly.



# Performance Summary

At June 30, 2022

(\$ in millions)

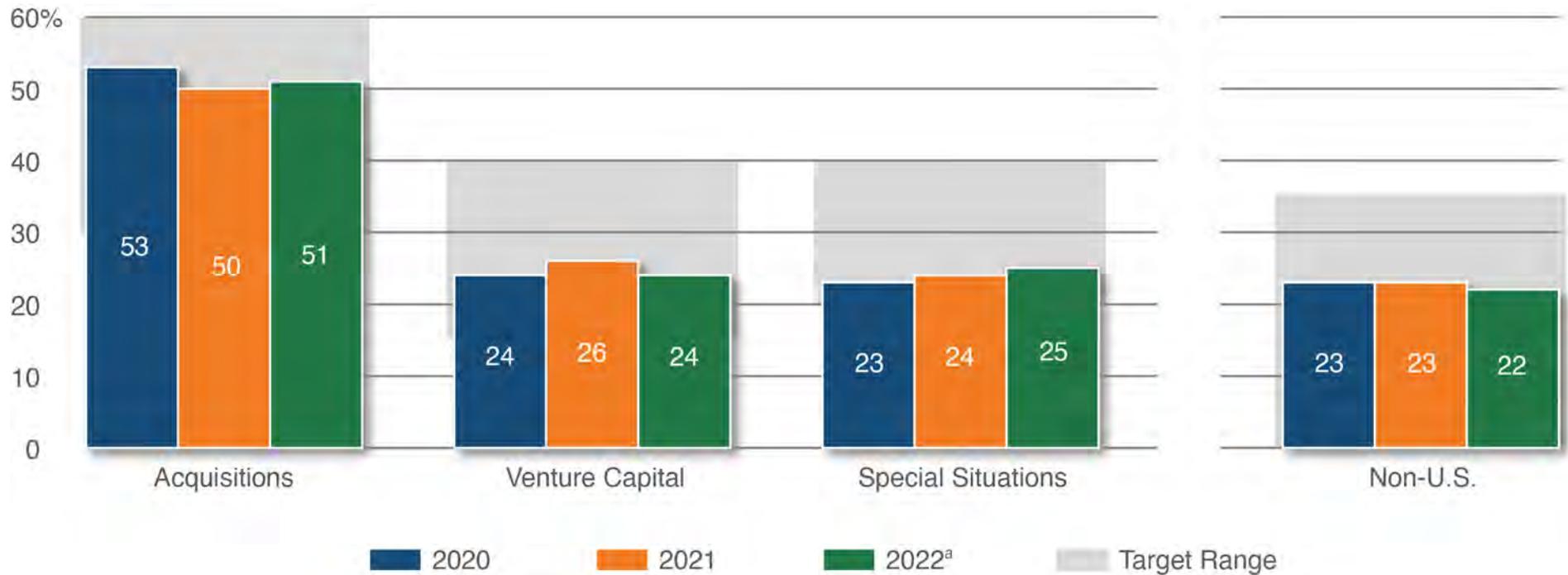


<sup>a</sup>Commitments to non-USD-denominated investments are accounted for by multiplying unfunded commitments by the quarter-ending exchange rate, then adding the result to cumulative capital contributions, causing commitments to non-USD-denominated investments to fluctuate quarterly.



## Investment Strategy Diversification

As a % of Partnership Market Value plus Unfunded Commitments



NOTE: Based on partnership market values and unfunded partnership commitments at December 31 of each year.

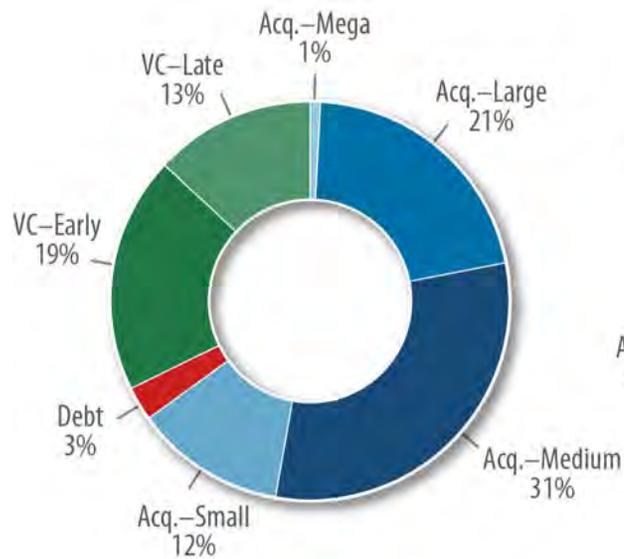
<sup>a</sup>Based on partnership market values and unfunded partnership commitments at June 30, 2022, plus new commitments made or approved through October 31, 2022.



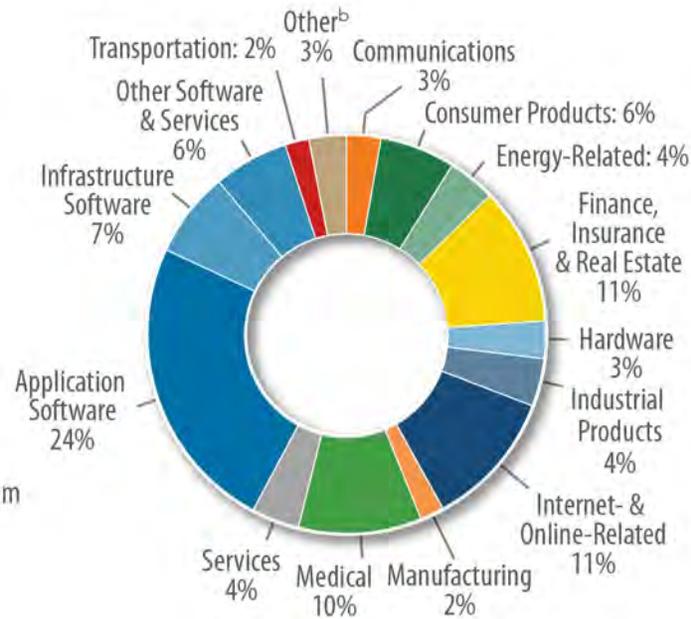
# Portfolio Company Diversification

At June 30, 2022

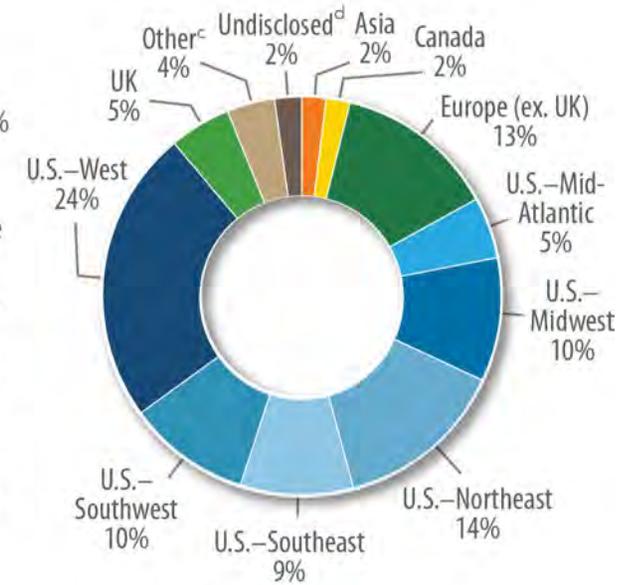
### INVESTMENT STRATEGY<sup>a</sup>



### INDUSTRY



### GEOGRAPHIC REGION



<sup>a</sup>Acquisition substrategies are based on the following ranges of total enterprise values: Mega >\$10 billion, Large \$1–\$10 billion, Medium \$200 million–\$1 billion, and Small <\$200 million.

<sup>b</sup>Comprises utilities; agriculture-, forestry-, and fishing-related; construction and building products; and social infrastructure, as well as investments for which the general partners have not provided industry classifications.

<sup>c</sup>Comprises Africa, Australia, Central America, Mexico, the Middle East, and South America.

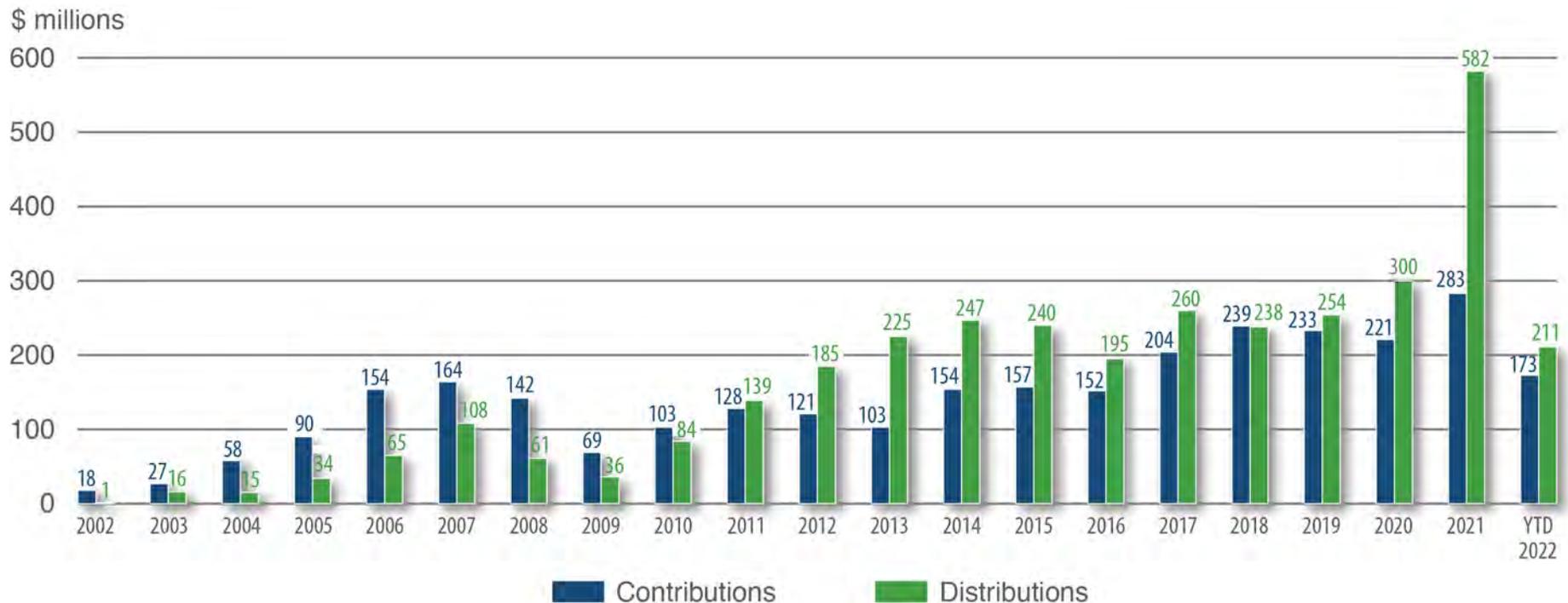
<sup>d</sup>Comprises investments for which the general partners have not provided geographic classifications.



## Contribution and Distribution Activity

At October 31, 2022

### ANNUAL CASH FLOWS SINCE INCEPTION



- Distribution activity has moderated during 2022 from the previous year's record pace but remains healthy compared with historical standards.
- The portfolio has generated positive cash flow in 11 of the past 12 years, during which distributions exceeded contributions by \$908 million.



## Portfolio Performance

At June 30, 2022

(\$ in millions)

	No. of Partnerships	Commitments <sup>a</sup>	Contributions <sup>b</sup>	Distributions	Market Value	Total Value	Gain/Loss	Since-Incep. Net IRR
Jun 30, 2022	346	\$3,278.8	\$2,932.3	\$3,424.8	\$2,040.5	\$5,465.2	\$2,533.0	15.6%
Jun 30, 2021	304	3,052.2	2,672.2	2,935.7	2,236.0	5,171.8	2,499.6	16.3%
<b>YoY Change</b>	<b>42</b>	<b>\$226.6</b>	<b>\$260.1</b>	<b>\$489.0</b>	<b>(\$195.6)</b>	<b>\$293.4</b>	<b>\$33.4</b>	<b>-70bps</b>

NOTE: Amounts may not foot due to rounding.

<sup>a</sup>Commitments to non-USD-denominated investments are accounted for by multiplying the unfunded commitments by the quarter-ending exchange rate, then adding the result to cumulative capital contributions, causing commitments to non-USD-denominated investments to fluctuate.

<sup>b</sup>Includes capital contributed for management fees called outside the total commitment.

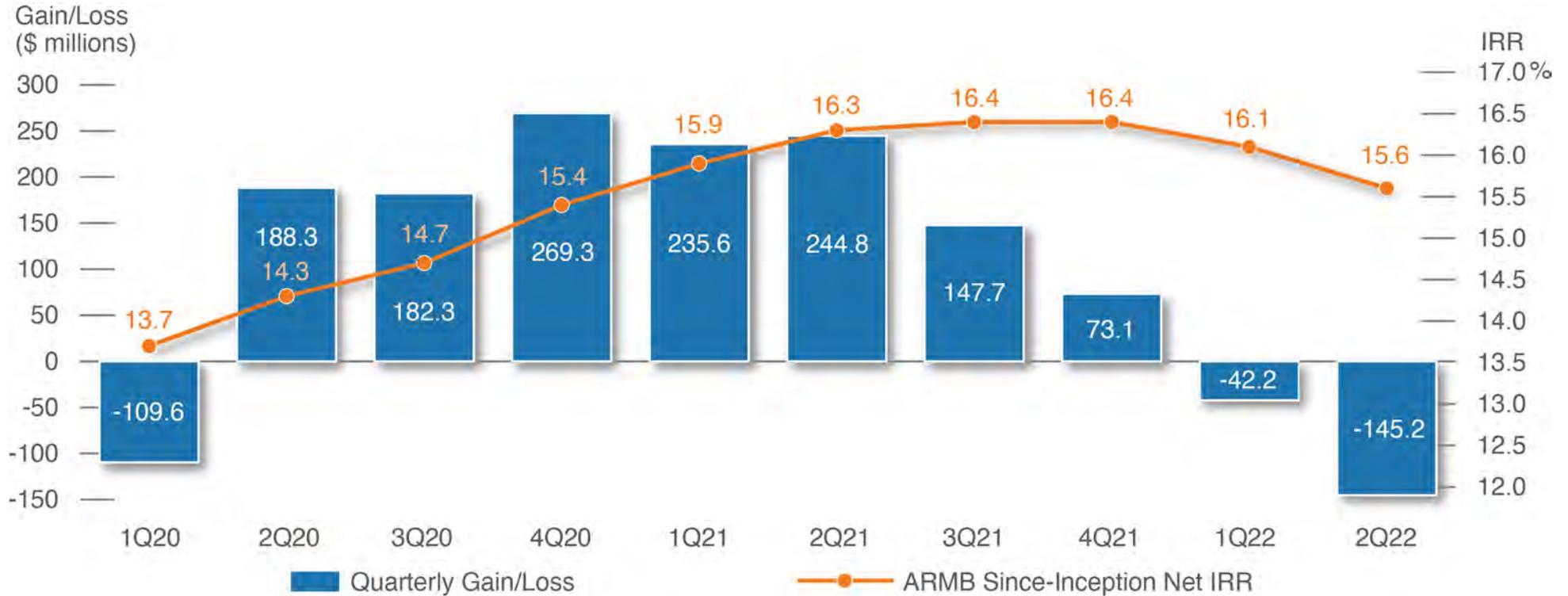
- Following a record year in 2021, the ARMB portfolio was impacted by public market declines during the first half of 2022.
- The portfolio generated a 1-year return of 1.6% and a 1-year gain of \$33 million, which resulted in a 70-basis-point decrease in the portfolio's since-inception net IRR.
- Despite the challenging economic environment,
  - the portfolio outperformed the Russell 3000 and the MSCI World Index by approximately 1,500 basis points and 1,400 basis points, respectively, on a dollar-weighted basis;
  - 55 partnerships generated 1-year returns in excess of 30%;
  - the portfolio is well-diversified across the economy and comprises investments alongside high-quality managers with meaningful experience investing over multiple economic cycles.



# Recent Performance

At June 30, 2022

### ARMB QUARTERLY GAIN/LOSS AND S-I NET IRR



Over the Past 10 Quarters:	<b>27.3%</b> NET IRR	<b>\$1.0</b> BILLION Gains	<b>\$1.0</b> BILLION Distributions to ARMB
----------------------------	-------------------------	----------------------------------	--



## Performance by Segment

At June 30, 2022

(\$ in millions)

Investment Type	No. of Invs.	Commit. <sup>a</sup>	Contrib. <sup>b</sup>	Distrib.	Market Value	Total Value	Gain/Loss	TVPI	IRR <sup>c</sup>
Buyouts	198	\$1,752	\$1,565	\$1,805	\$1,031	\$2,836	\$1,271	1.8x	16.4%
Venture Capital	69	692	590	745	537	1,282	692	2.2x	16.1%
Special Situations	79	835	777	875	472	1,347	570	1.7x	13.8%
<b>Total</b>	<b>346</b>	<b>\$3,279</b>	<b>\$2,932</b>	<b>\$3,425</b>	<b>\$2,040</b>	<b>\$5,465</b>	<b>\$2,533</b>	<b>1.9x</b>	<b>15.6%</b>

Investment Type	No. of Invs.	Commit. <sup>a</sup>	Contrib. <sup>b</sup>	Distrib.	Market Value	Total Value	Gain/Loss	TVPI	IRR <sup>c</sup>
Primary	254	\$3,019	\$2,686	\$3,255	\$1,778	\$5,033	\$2,347	1.9x	15.4%
Secondary	18	69	64	47	53	101	37	1.6x	22.7%
Co-investment	74	191	182	123	209	332	149	1.8x	26.2%
<b>Total</b>	<b>346</b>	<b>\$3,279</b>	<b>\$2,932</b>	<b>\$3,425</b>	<b>\$2,040</b>	<b>\$5,465</b>	<b>\$2,533</b>	<b>1.9x</b>	<b>15.6%</b>

Region	No. of Invs.	Commit. <sup>a</sup>	Contrib. <sup>b</sup>	Distrib.	Market Value	Total Value	Gain/Loss	TVPI	IRR <sup>c</sup>
U.S.	277	\$2,596	\$2,361	\$2,892	\$1,615	\$4,507	\$2,146	1.9x	16.1%
Non-U.S.	69	682	571	533	425	958	387	1.7x	13.6%
<b>Total</b>	<b>346</b>	<b>\$3,279</b>	<b>\$2,932</b>	<b>\$3,425</b>	<b>\$2,040</b>	<b>\$5,465</b>	<b>\$2,533</b>	<b>1.9x</b>	<b>15.6%</b>

NOTE: Amounts may not foot due to rounding.

<sup>a</sup>Commitments to non-USD-denominated investments are accounted for by multiplying the unfunded commitments by the quarter-ending exchange rate, then adding the result to cumulative capital contributions, causing commitments to non-USD-denominated investments to fluctuate quarterly.

<sup>b</sup>Includes contributions for all investments, fees, and expenses.

<sup>c</sup>Net of the underlying partnerships' fees, expenses, and carry.



## Recent Significant Events within the ARMB Portfolio

Since November 1, 2021





## Vintage Year Performance vs. Industry Benchmarks

At June 30, 2022

### NET IRR



<sup>a</sup>Burgiss Private i global all private equity median return benchmark, as of June 30, 2022, as produced using Burgiss data.

- All 19 of ARMB's more mature vintages (2001–2019) rank above-median for their vintages, collectively exceeding their median benchmarks by an average of 620 basis points.



# Vintage Year Performance vs. Industry Benchmarks

At June 30, 2022

## DISTRIBUTIONS TO PAID IN CAPITAL (DPI)



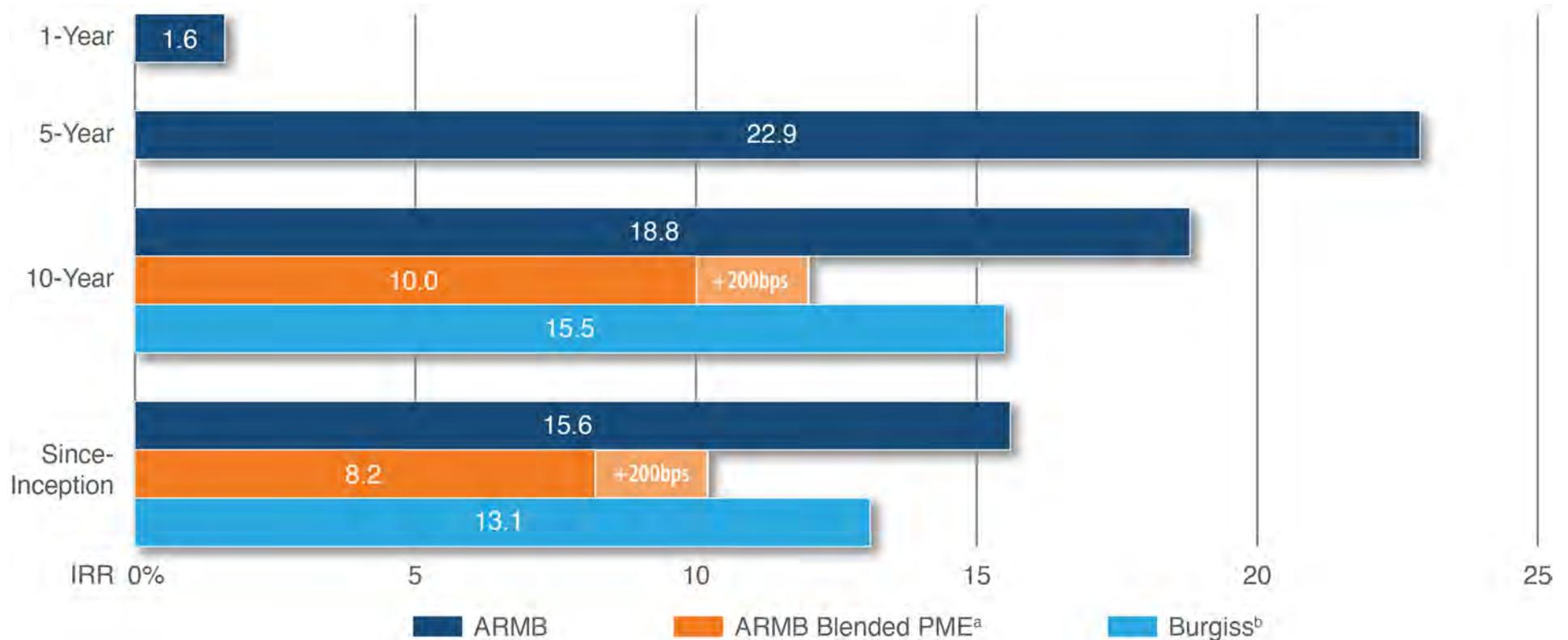
<sup>a</sup>Burgiss Private i global all private equity median DPI benchmark, as of June 30, 2022, as produced using Burgiss data.

- All 19 vintage years rank above-median with respect to DPI.



## Net Performance vs. Public and Private Market Indices

At June 30, 2022



<sup>a</sup>Represents the dollar-weighted return of the ARMB blended benchmark (1/3 S&P 500, 1/3 Russell 2000, and 1/3 MSCI EAFE). Performance was derived by applying ARMB's cash inflows and outflows to the index's daily returns.

<sup>b</sup>Burgiss Private I global all private equity pooled horizon returns for 2001- through 2022-vintage funds, as of June 30, 2022, as produced using Burgiss data.



# Appendix



## Biographies



**James R. Chambliss**  
Managing Director

Mr. Chambliss joined Pathway in 1994 and is a managing director in the California office. He is responsible for investment analysis and conducting due diligence on primaries, secondaries, and co-investments; negotiating and reviewing investment vehicle documents; and client servicing. Mr. Chambliss is a member of various Pathway committees, including the firm's Management Committee, Investment Committee, and Co-investment Investment Subcommittee. Mr. Chambliss also serves on the advisory boards of several private market partnerships.

Mr. Chambliss received a BS in business administration, with an emphasis in finance, from Loyola Marymount University and an MBA from the Marshall School at the University of Southern California.



**Canyon J. Lew**  
Managing Director

Mr. Lew joined Pathway in 2004 and is a managing director in the California office. He is responsible for investment analysis and conducting due diligence on primaries, secondaries, and co-investments; negotiating and reviewing investment vehicle documents; and client servicing. Mr. Lew is co-head of Pathway's co-investment team and is a member of the firm's Co-investment Investment Subcommittee. Mr. Lew also serves on the advisory boards of several private market partnerships.

Prior to joining Pathway, Mr. Lew worked for Fleet Fund Investors as an associate, where he monitored investments within Fleet Bank's private equity portfolio and reviewed new investment opportunities. Mr. Lew received an AB in economics and engineering from Brown University and an MS, with high honors, in investment management from Boston University.



## Biographies (continued)



**Wyatt H. Geiger, CFA**  
Senior Vice President

Mr. Geiger joined Pathway in 2014 and is a senior vice president in the California office. His responsibilities include investment analysis and conducting due diligence on primaries, secondaries, and co-investments; investment monitoring; performance analysis; client reporting; and client servicing. Mr. Geiger also heads the firm's market research team, which tracks the data, trends, and issues impacting the private markets and also publishes Pathway's quarterly Private Market Environment reports and other periodic research reports and studies. He received a BS in business administration from the University of Southern California. Mr. Geiger is a CFA charterholder.



## Pathway Contact Information

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Tel: 949-622-1000

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Martin Wing—Senior Vice President—Consultant  
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Simon Lau—Managing Director

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Jerry Branka—Senior Vice President  
Andrea Mack—Senior Vice President—Head of  
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Chiyoda-ku, Tokyo 100-0005  
Japan  
Tel: +81 (0) 3 3212 8103  
Soichi “Sam” Takata—Head of Private Equity

### London

Pathway Capital Management (UK) Limited  
15 Bedford Street  
London WC2E 9HE  
Tel: +44 (0) 20 7438 9700  
Alex Casbolt—Managing Director

### Website

[pathwaycapital.com](http://pathwaycapital.com)



# Alaska Retirement Management Board

December Meeting 2022



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The term "Battery Ventures Funds" refers to Battery Ventures I, L.P. ("BV I"), Battery Ventures II, L.P. ("BV II"), Battery Ventures III, L.P. ("BV III"), Battery Ventures IV, L.P. ("BV IV"), Battery Ventures V, L.P. ("BV V / CF"), Battery Ventures VI, L.P. ("BV VI"), Battery Ventures VII, L.P. ("BV VII"), Battery Ventures VIII, L.P. ("BV VIII") and Battery Ventures VIII Side Fund ("BV VIII SF") (collectively known as "BV VIII/SF"), Battery Ventures IX, L.P. ("BV IX"), Battery Ventures X, L.P. ("BV X") and Battery Ventures X Side Fund, L.P. ("BV X SF") (collectively known as "BV X/SF"), Battery Ventures XI-A, L.P. ("BV XI-A"), Battery Ventures XI-A Side Fund, L.P. ("BV XI-A SF"), Battery Ventures XI-B, L.P. ("BV XI-B"), Battery Ventures XI-B Side Fund, L.P. ("BV XI-B SF"), Battery Ventures XII, L.P. ("BV XII") and Battery Ventures XII Side Fund, L.P. ("BV XII SF") (collectively known as "BV XII/SF"), Battery Ventures XIII, L.P. ("BV XIII") and Battery Ventures XIII Side Fund, L.P. ("BV XIII SF") (collectively known as "BV XIII/SF"), Battery Ventures XIV, L.P. ("BV XIV"), Battery Ventures Select Fund I, L.P. ("Select Fund I"), and Battery Ventures Select Fund II, L.P. ("Select Fund II"). BV XI-A and BV XI-A SF may be referred to collectively as "BV XI-A/SF," while BV XI-B and BV XI-B SF may be referred to collectively as "BV XI-B/SF." BV XI-A and BV XI-B may be collectively referred to as "BV XI," while BV XI-A SF and BV XI-B SF may be collectively referred to as "BV XI Side Fund." BV XI and BV XI Side Fund may be collectively referred to as "BV XI/SF." Each fund is individually known as a "Battery Ventures Fund" or a "Fund."

Note that the information in this presentation does not include amounts invested, returns or other data with respect to the following investment vehicles which co-invest with certain Battery Ventures Funds: Battery Investment Partners IX, LLC, Battery Investment Partners X, LLC, Battery Investment Partners XI, LLC, Battery Investment Partners XII, LLC, Battery Investment Partners XIII, LLC, Battery Investment Partners XIV, L.P., Battery Ventures XIV-EF, L.P., Battery Investment Partners Select Fund I, L.P., Battery Investment Partners Select Fund II, L.P. and any other similar co-investment vehicles. Participants in such entities generally include employees and other individuals, currently or previously associated with Battery, and their family members, as well as current and former Battery Ventures portfolio company executives, entrepreneurs and similar persons. Battery Ventures considers the investment performance of these entities to be less relevant to a prospective investor in the Battery Ventures Funds because of their different economic terms.

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This presentation includes examples of portfolio companies in which Battery Ventures Funds have invested. These examples are included as illustrations of Battery Ventures' various investment strategies. For a complete list of all portfolio companies of the Battery Ventures Funds, go to <https://www.battery.com/list-of-all-companies/>. Information regarding the specific performance of prior investment recommendations is available upon request.

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Battery follows a common industry practice of referring to its senior professionals as "general partners" or "GPs"; however, each Battery Venture Fund's general partner is an entity indirectly controlled by these individuals.

**Battery**

Battery Ventures Proprietary and Confidential

## Agenda

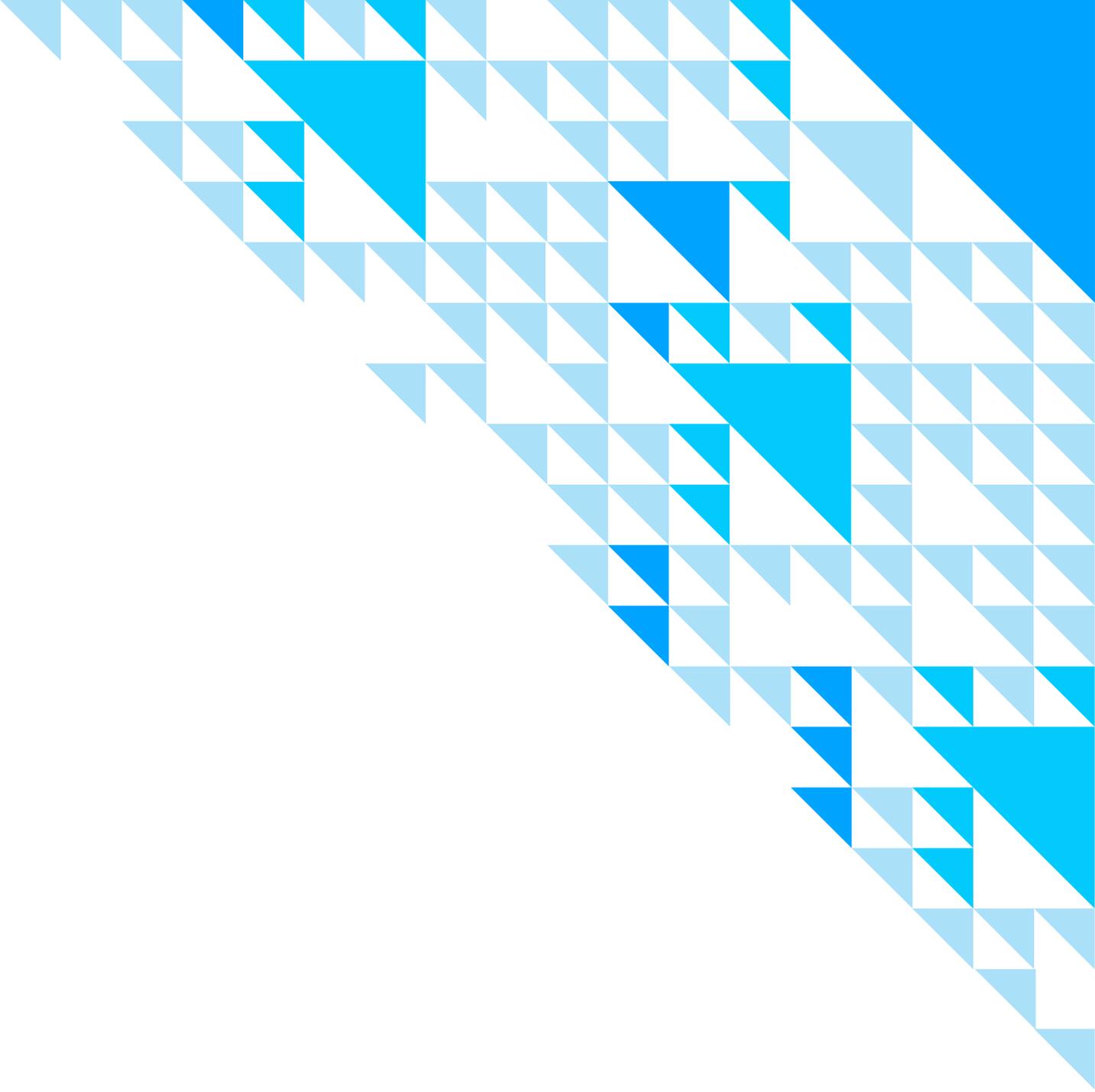
- Introductions
- About Battery
- Current Economic Climate & Private Market Investing
- BV XIV

## Today's Discussion

- Jesse Feldman, General Partner
  - Joined Battery in 2005, member of the firm's Executive Committee
- Karen Bommart, Partner, IR
  - Joined Battery in 2005
- Thank you for your support & partnership, ARMB has been “in the family” since BV VI (1999)

Overview

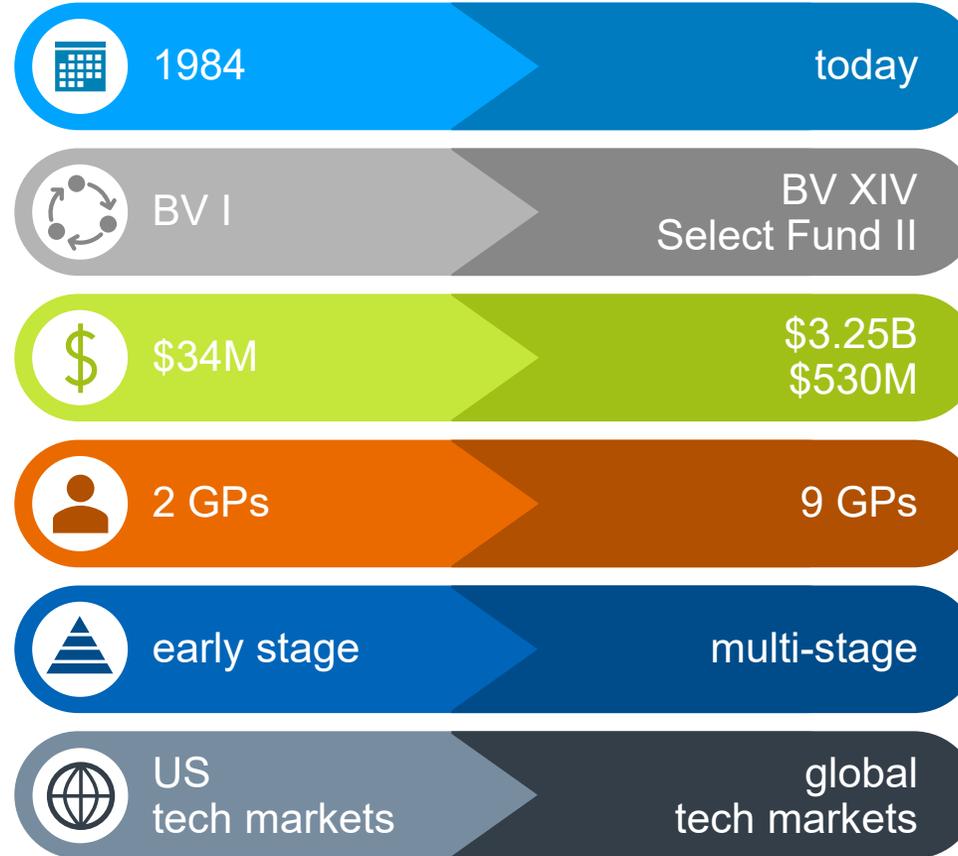
# Battery Ventures



# Why Battery

- >39 years** | dedicated to the technology markets engenders pattern recognition and domain expertise
- product / market focus** | leads to a diversity of investments across the stage spectrum
- team-based philosophy** | and structured processes foster consistency while driving innovation
- investment strategy** | with the goal to deliver consistent performance in any macro-economic climate

# Dedicated to Tech Markets



# One Team Worldwide

Alaska Retirement Management Board  
11/14/22



# General Partners and Partners



**Neeraj Agrawal**  
General Partner  
Joined: 2000

Focus: Application Software, Consumer, Infrastructure Software



**Michael Brown**  
General Partner  
Joined: 1998

Focus: Application Software, Consumer, Infrastructure Software



**Morad Elhafed**  
General Partner  
Joined: 2008

Focus: Application Software, Infrastructure Software



**Jesse Feldman**  
General Partner  
Joined: 2005

Focus: Industrial Tech



**Russell Fleischer**  
General Partner  
Joined: 2014

Focus: Application Software, Infrastructure Software



**Roger Lee**  
General Partner  
Joined: 2001

Focus: Consumer



**Marcus Ryu**  
Partner  
Joined: 2022

Focus: Application Software



**Shiran Shalev**  
Partner  
Joined: 2013

Focus: Application Software, Consumer, Infrastructure Software



**Zack Smotherman**  
General Partner  
Joined: 2013

Focus: Industrial Tech



**Chelsea Stoner**  
General Partner  
Joined: 2006

Focus: Application Software



**Dave Tabors**  
Private Equity Partner  
Joined: 1995

Focus: Application Software



**Dharmesh Thakker**  
General Partner  
Joined: 2015

Focus: Application Software, Infrastructure Software



**Scott Tobin**  
Senior Partner  
Joined: 1997

Focus: Application Software, Consumer, Infrastructure Software



**Jordan Welu**  
Partner  
Joined: 2014

Focus: Application Software, Infrastructure Software

14

**General Partners and Partners:**  
Average years of tenure at BV

10

of

13

**Deal Leads:**  
joined as Associate or Vice President

- Boston
- San Francisco
- Menlo Park
- Tel Aviv

# Deep Bench of Additional Investment Professionals



**Roland Anderson**  
Principal  
Joined: 2014  
Focus: Application Software



**Zak Ewen**  
Principal  
Joined: 2010  
Focus: Application Software, Infrastructure Software



**Brandon Gleklen**  
Principal  
Joined: 2015  
Focus: Application Software, Consumer, Infrastructure Software



**Satoshi Harris-Koizumi**  
Principal  
Joined: 2012  
Focus: Application Software, Infrastructure Software



**Dillon Joyce**  
Principal  
Joined: 2016  
Focus: Application Software, Infrastructure Software



**Justin Rosner**  
Principal  
Joined: 2014  
Focus: Industrial Tech

## Vice Presidents



## Associates



## Analysts



- Matrixed organization, junior team encouraged to work with more than one GP
- Team-oriented approach, everyone contributes to project work, deal discussion and diligence
- All levels responsible for sourcing and conducting diligence

- Boston
- New York
- San Francisco
- Menlo Park
- Tel Aviv
- London

# Additional Senior Support Team

## Leverage for GPs and support for the portfolio

### Operations



**Karen Bommart**  
Investor Relations  
Partner



**Kristen Manning**  
Human Resources  
Partner



**Lizette Perez-Deisboeck**  
General Counsel /  
Chief Compliance Officer



**Chris Schiavo**  
Chief Financial  
Officer

### Portfolio Services & Operating Partners



**Alex Auchter**  
Director  
Growth Operations



**Alex Benik**  
Partner



**Bill Binch**  
Operating Partner



**Rebecca Buckman**  
Marketing Partner



**Scott Goering**  
Business  
Development Partner



**Jenny Kang**  
Talent Partner



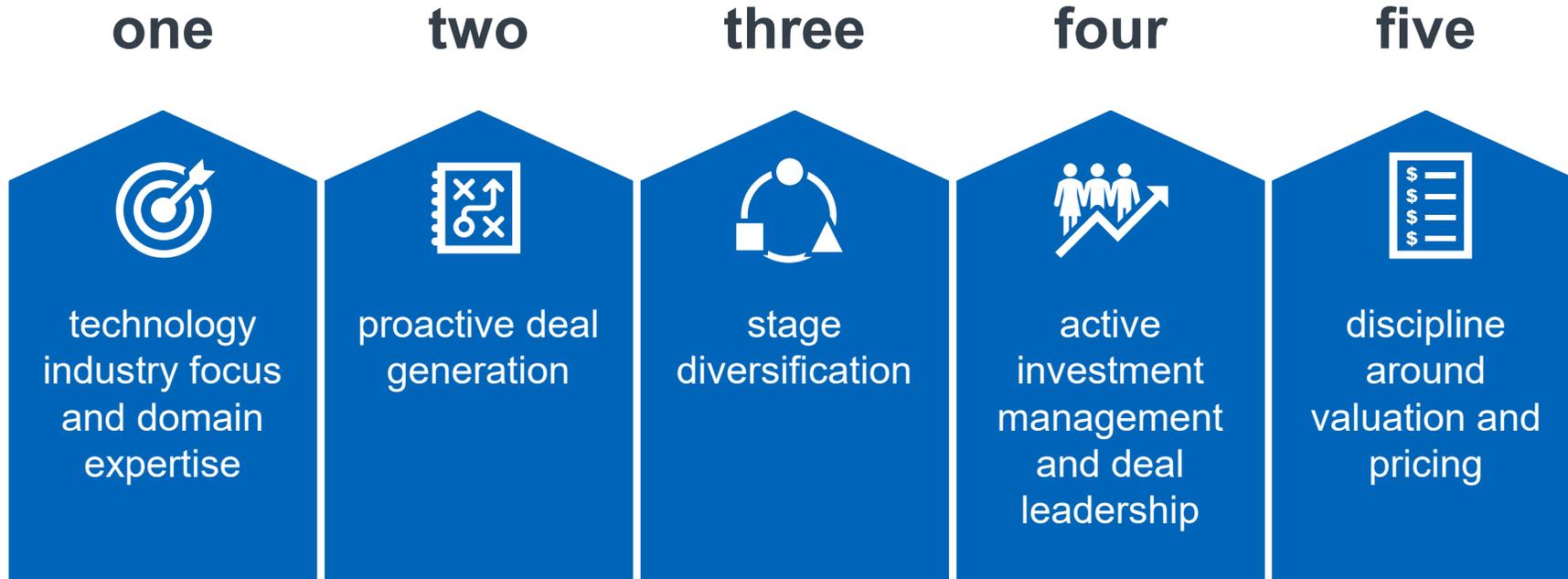
**Susanne Richman**  
Talent Partner



**Max Schireson**  
Operating Partner

# Investment Strategy Overview

Five key pillars



# one | Technology Focus and Domain Expertise



Think product & market first



Thesis-driven,  
research-intensive



Invest in our core sectors  
across stages and geographies

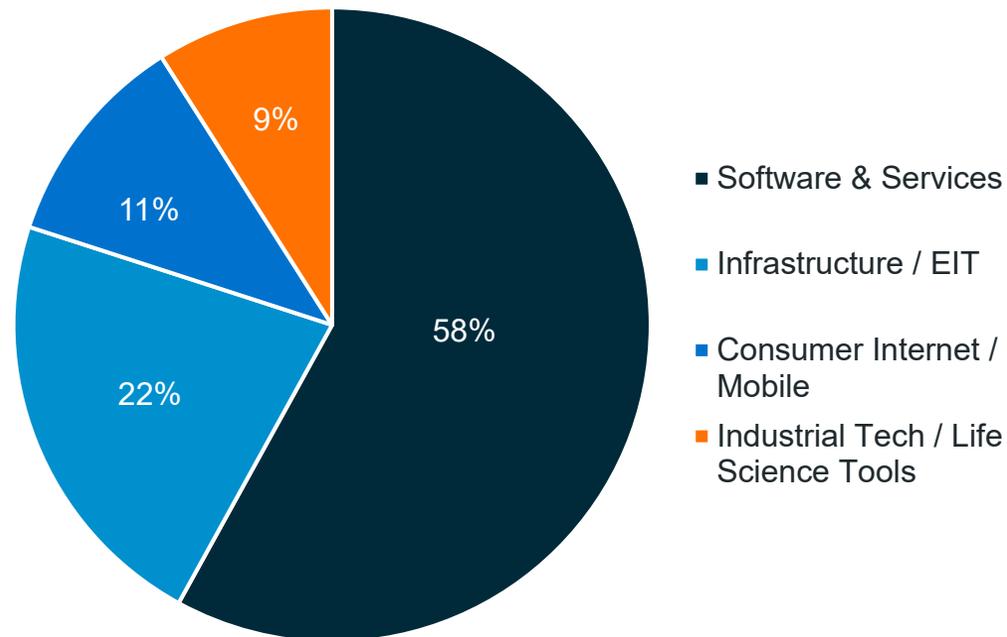
Responsive to market dynamics  
and long-term trends

Span Seed through Buyout

Invest across the US, as well as  
ex-US, including Canada, Western  
Europe and Israel

Seek to expand thoughtfully outside  
our core, evaluating potential  
“frontier tech” opportunities

Battery VIII/SF - BV XIV and Select Fund I & II<sup>1</sup>  
Dollars Invested & Reserved by Sector  
(\$ in Millions)



- Software & Services
- Infrastructure / EIT
- Consumer Internet / Mobile
- Industrial Tech / Life Science Tools

<sup>1</sup> Dollars Invested & Reserved includes deals categorized as “Other/Seed”. Deal counts exclude deals categorized as “Other/Seed”. Clean tech investments made by BV VIII are excluded from both the Dollars Invested & Reserved (1%) and the deal counts (5).

## two | Proactive Deal Generation



**Targeted**  
Technology and market  
research projects



**Broad**  
Proactive calls  
Conference attendance  
Key region prospecting  
BV-sponsored events  
“Long tail” banker events  
Knowing what our portfolio uses



**People Prospecting**  
Formalized Entrepreneur- and  
Executive-in-Residence  
(EIR) programs  
Always working our networks  
Leveraging entrepreneur  
relationships

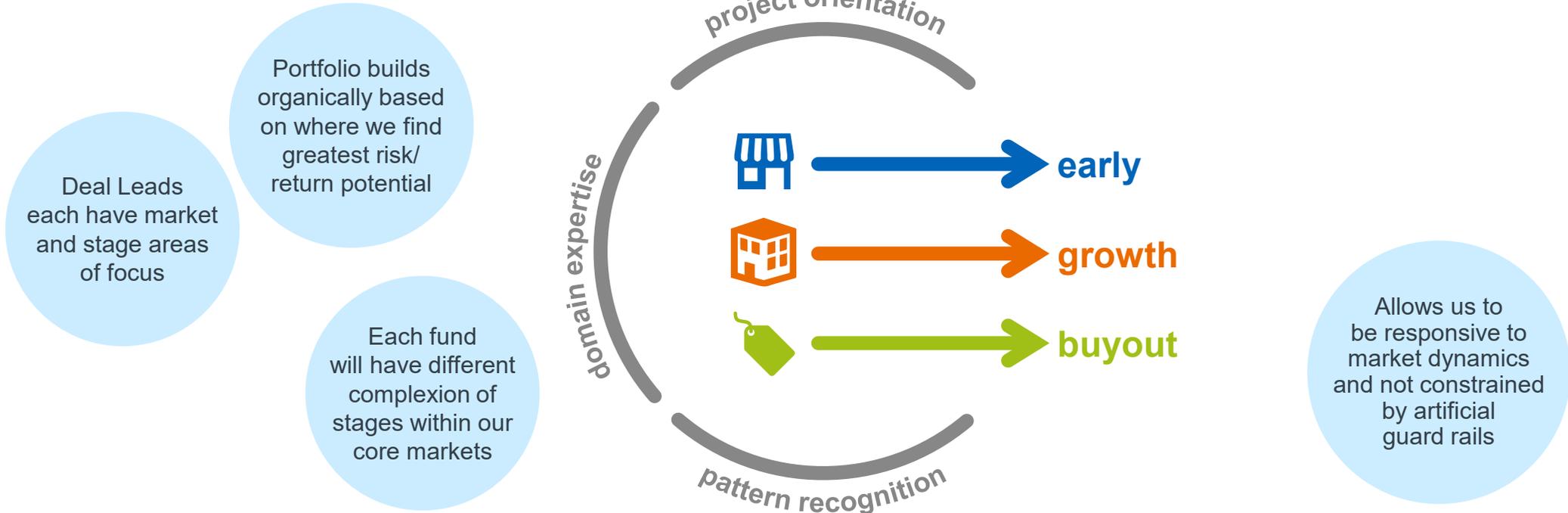


of investments  
made by funds  
BV VIII/SF - BV XIV  
were proactively  
generated<sup>1</sup>

<sup>1</sup> Excludes deals categorized as “Other/Seed” and excludes cross-fund deals. “Proactive Call/Other Outbound” and “Entrepreneur Relationship” comprise the categories we consider “proactive” deal generation.

# three | Stage Diversification<sup>1</sup>

An outcome of market-based investing



<sup>1</sup> To help us develop a potentially larger set of opportunities in our Early, Growth and Buyout strategies we may make modest initial investments in companies for which we have a streamlined Investment Committee process and in which we typically do not take a seat on the company's board of directors. We currently categorize these investments as "Other/Seed," and consider them as separate from our "Early," "Growth, and "Buyout" strategies.

# four | Active Investment Management & Deal Leadership

Domain expertise leads to tangible support

domain expertise

Lend hands-on support on team building, financing, sales, marketing, business strategy, and exit alternatives

Rely on full investment team worldwide to support any and all portfolio companies

Pattern recognition and institutional knowledge positions us well to provide guidance

Portfolio Services Team & Operating Partners provide leverage to investment team

—  
Recruiting & talent

—  
Marketing/PR

—  
Business development

—  
Go-to-market and operational efficiency

Work to be “first call” the founder or CEO makes

BV VIII/SF --  
BV XIV:

92%<sup>1</sup> of portfolio we hold a board of directors or a board observer seat

Bias toward meaningful partnership prior to investing

Willing to take passive role when return profile warrants

Actively source and help execute M&A for growth and buyout investments

Alaska Retirement Management Board  
11/14/22

11/14/22

# five | Discipline Around Valuation and Pricing

## Our main considerations

- 

Does not mean always seeking lowest priced investments
- 

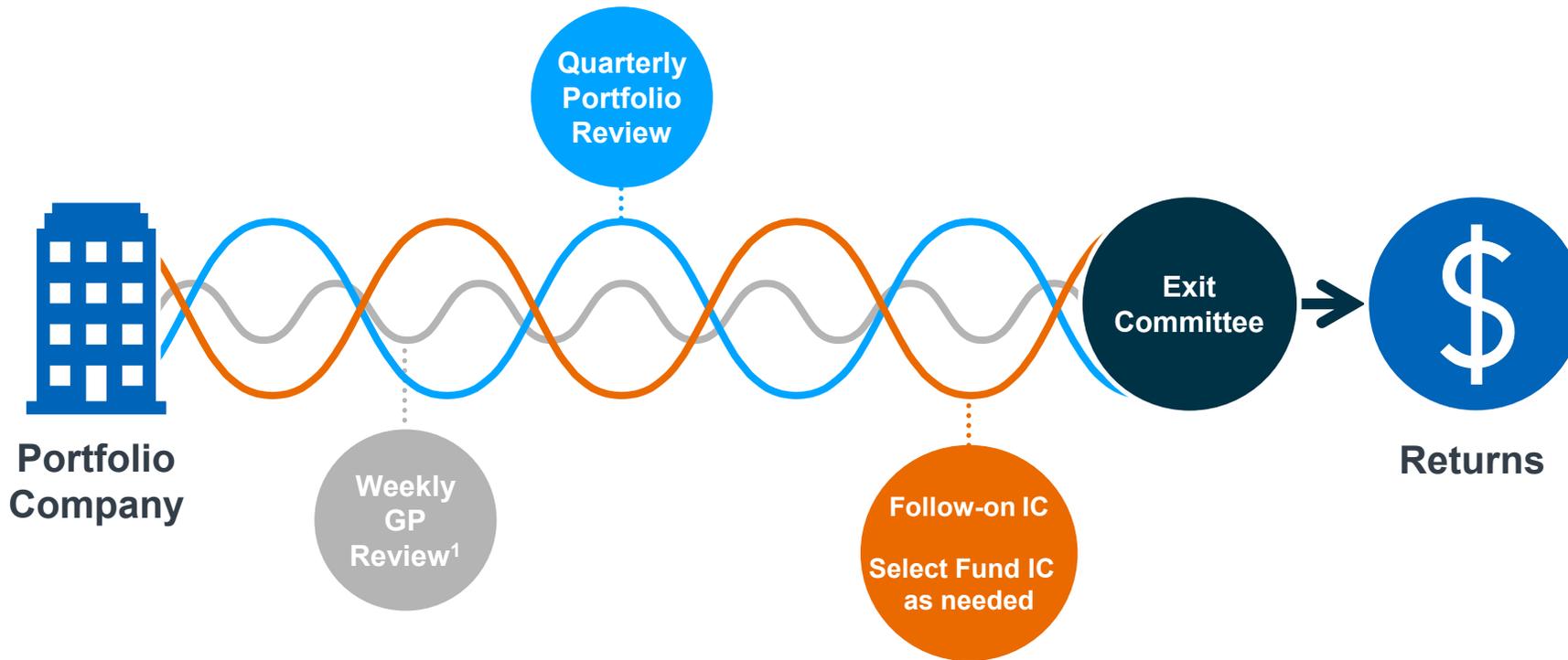
Balance search for outsized returns with disciplined approach
- 

Proprietary deal flow helps maintain pricing restraint regardless of market dynamics
- 

Different risk/reward characteristics apply at different stages and to different situations

 early	 growth	 Buyout	
		Growth	Traditional
<ul style="list-style-type: none"> <li>• Balance ownership against dollars invested</li> <li>• Manage burn as relates to growth rate/financing environment</li> <li>• Opportunistically look for ways to buy up ownership in stand-out companies</li> <li>• At entry, valuation matters less at the earliest stages</li> </ul>	<ul style="list-style-type: none"> <li>• Believe company can sustain aggressive growth rate</li> <li>• Believe company can achieve category leadership in large market</li> <li>• Avoid “momentum” late rounds, pay up when have conviction on market size and company’s ability to execute</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain valuation discipline on growth-adjusted basis</li> <li>• Believe company can sustain moderate-to-high growth and establish or maintain category leadership</li> <li>• Consider that accelerated organic growth and M&amp;A can provide nice upside</li> <li>• Understand basis (revenue vs. EBITDA) for exit valuation</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure can buy at low relative multiples</li> <li>• Believe can be catalyst for change, can build value via new management, operational improvements, M&amp;A</li> <li>• Understand basis (revenue vs. EBITDA) for exit valuation</li> </ul>

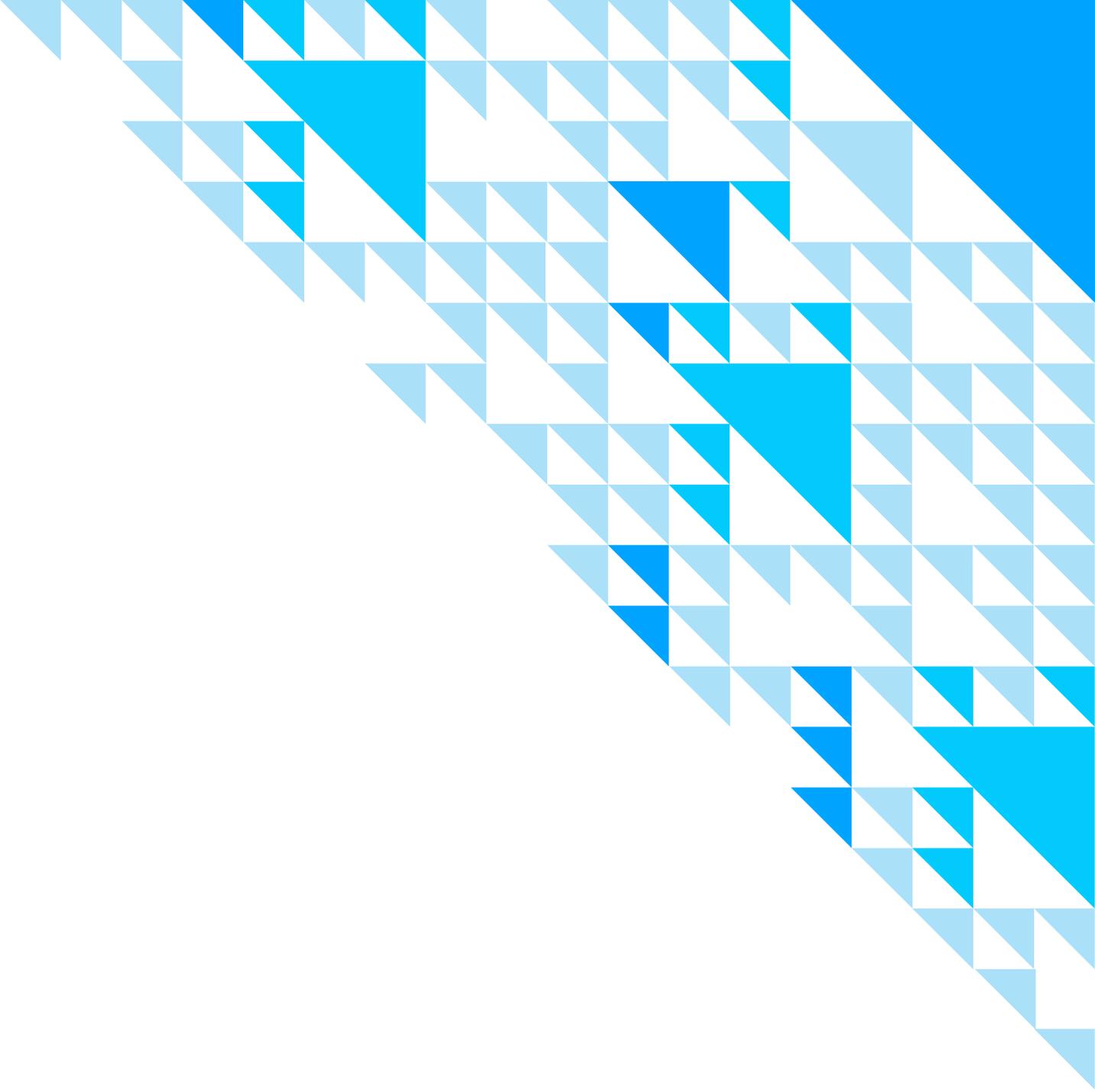
# Holistic Portfolio Management



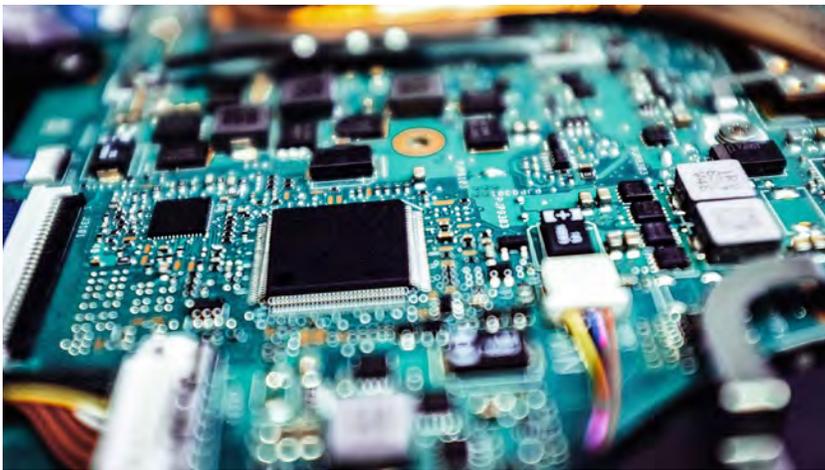
## Goals

- Disciplined portfolio construction and management
- Focused reserve planning and cash flow management at Fund level
- Mitigation of follow-on investment and exit-decision bias
- Maximize returns and liquidity throughout Fund lifecycle

# Macro Environment



# Challenges on the World Stage



# Challenges to the Economy



# Persistent Long-Term Challenges



## The Outlook: More Uncertainty?

### The risks to the outlook are tilted to the downside

- Global output contracted in Q2'22 due to downturns in China and Russia, while US consumer spending undershot expectations; headwinds continued in Q3'22
- Several shocks have hit a world economy already weakened by the pandemic
  - Higher-than-expected inflation worldwide—especially in the US and major European economies—triggering tighter financial conditions
  - Worse-than-anticipated slowdown in China, reflecting COVID- 19 outbreaks and lockdowns
  - Further negative spillovers from the war in Ukraine
- Increasing prices continue to squeeze living standards worldwide, and governments are wrestling with the competing levers of boosting spending and raising interest rates
  - Believe scale and complexity of the dislocation will extend the timeline for recovery

# So... What Does This Mean For Private Market Investing?

## Current Market Snapshot

- Dislocation is not a short-term concern
  - Although currently unclear what will happen with inflation and interest rates, we believe the macro uncertainty is likely not a short-term problem
- Valuations remain elevated
  - We are finding the “valuation reset” that we believe is over-due has not kicked in yet, and is still being internalized by the both buyers & sellers in today’s market
  - \$3.6T dry powder in the market is likely to extend the timeline to correction
- Continue to work closely with existing portfolio
  - Preparing management for multi-year headwinds
  - Adjusting budgets for more muted growth expectations
  - Managing cash / reducing burn / slowing hiring to extend runway
- Expect the new investment pace to remain slow
  - Our new investment pace is down to roughly 50% of our last five funds’ activity

## The Path Forward

- Albeit slower, we will continue to invest with the belief that:
  - A consistent investment pace is important to a long-term private markets strategy
  - Down markets can give rise to new and compelling business ideas and companies
- Turn the slower pace to our advantage
  - With pricing still elevated, we can use the measured pace to gain conviction on the market size, product market fit, and team
- Spend time on add-ons to our platform companies and “doubling down” on some of the strongest companies already in the portfolio
- Use our ~40-years of market knowledge to source what we know, while taking advantage of the overall market slowdown to explore the edges of our mandate

## ▲ The Path Forward

Select themes and project areas our teams are working on

- ✓ “Future of Work” / changing workforce dynamics
- ✓ Non-desk worker software – construction, hospitality, field services
- ✓ Security and tools to support agile software development
- ✓ Business and data intelligence, to make sense of the “explosion” of data
- ✓ Next-generation fintech
- ✓ Climate change measurement and monitoring
- ✓ Life science tools enabling genomics and drug discovery
- ✓ Supply chain and logistics

# BV XIV – Investments To-Date<sup>1</sup>



**Collaborative inbox software** with broad applicability to replace traditional email in uses where multiple users regularly log into a single account, **such as customer support**.



**Using machine learning and natural language processing**, automatically detects **security, data loss, and compliance risks** in what is shared, shown, spoken and typed across video, voice, chat, and document content.



“Front-of-house” Software as a Service (**SaaS**) for **mid-market and enterprise restaurant chains**, that provides an operating system for digital ordering, delivery management and kitchen management.



Software as a Service (**SaaS**) platform that enables **employee perk reimbursement** through stipends.



**Machine learning data intelligence software** that aims to bring structure to unstructured data and help data scientists manage data quality across the **model development** lifecycle.



A **materials procurement solution** that streamlines the requisition process for **subcontractors** (e.g., electrical, HVAC, plumbing, flooring, roofing), with an aim to reduce time and expense on materials management.

# BV XIV – Investments To-Date<sup>1</sup> (continued)



**Software and services** for sample management of compounds, reagents, and biological samples, serving **research processes across academia, biotech and global pharmaceutical markets.**



A “no-code” solution for business teams to work with live data directly from spreadsheets, with the goal to allow non-technical users to leverage the concepts of **business intelligence (BI) and data automation.**



Proprietary wireless control units and accompanying **cloud-based software for off-highway telematics** and remote monitoring, for automating service management of asset fleets. .



A financial planning and analysis software platform that aims to eliminate much of an analyst’s manual work, **freeing time for forward-looking, strategic business analysis.**



A cloud data security platform that aims to give **DevOps and security users -- visibility of their data sprawl** across their organization, as well as the tools to detect and remediate issues in real-time.

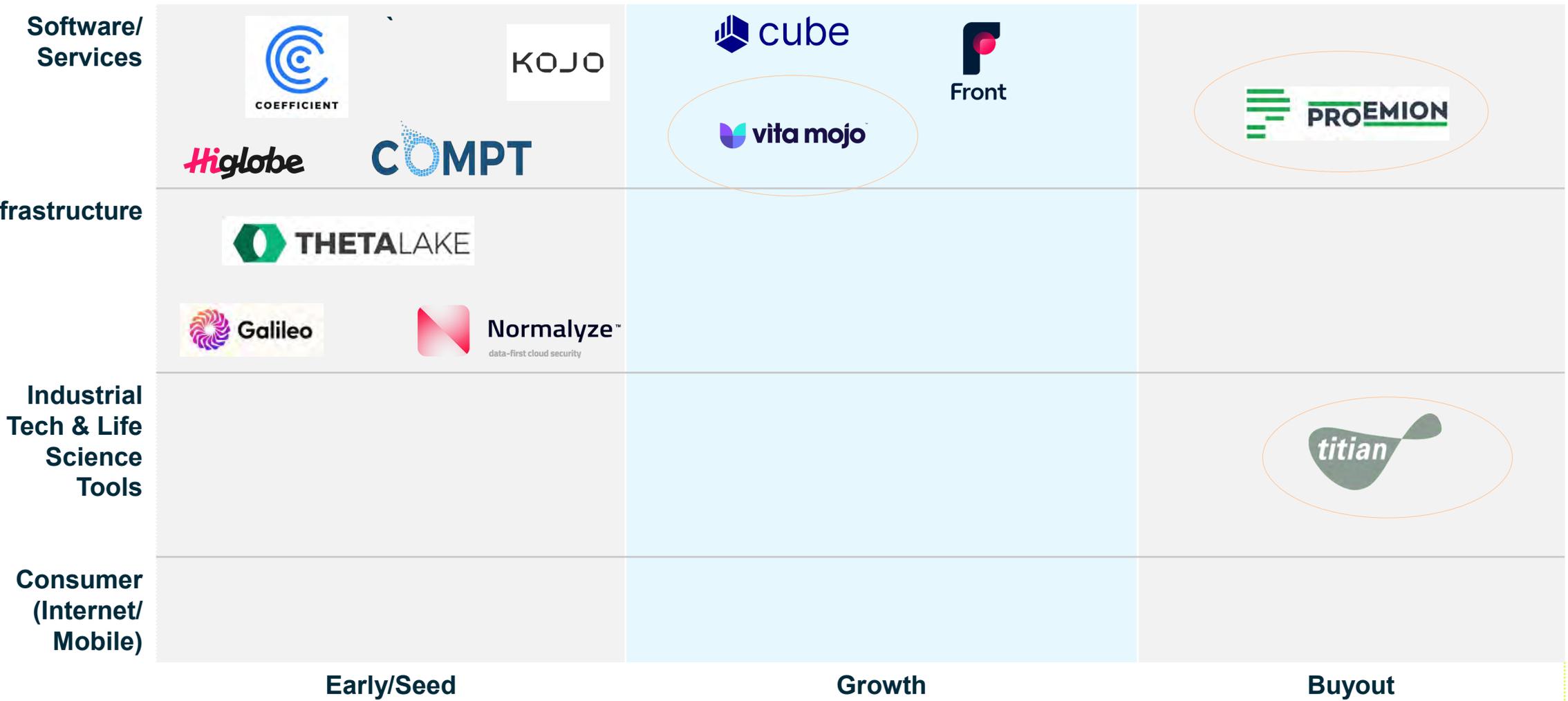


B2B **payment platform** leveraging blockchain rails and regulated stablecoins to **facilitate cross-border money transfers** at lower cost.

# BV XIV: A View Across Stages, Sectors and Geographies<sup>1</sup>

Alaska Retirement Management Board

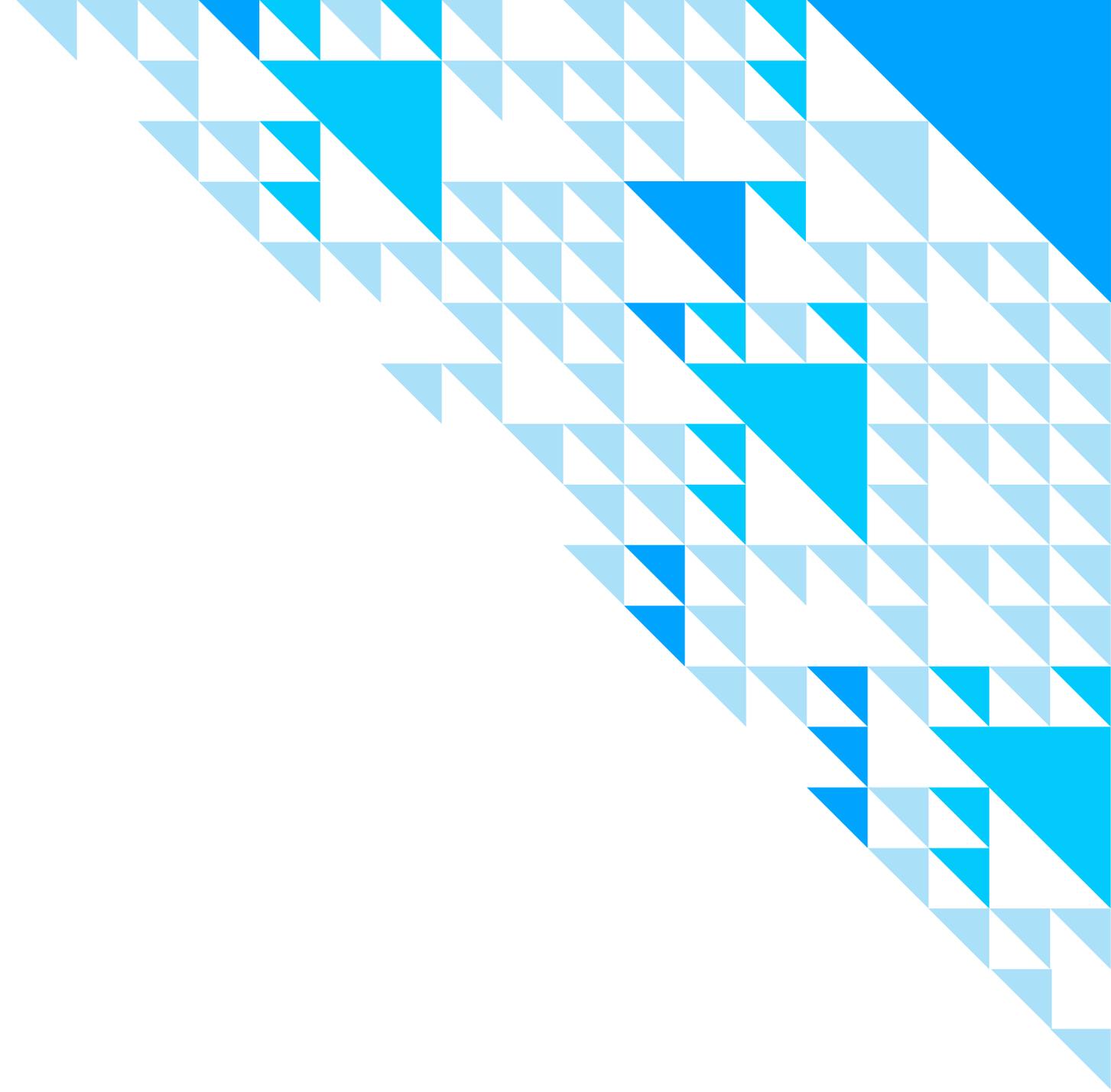
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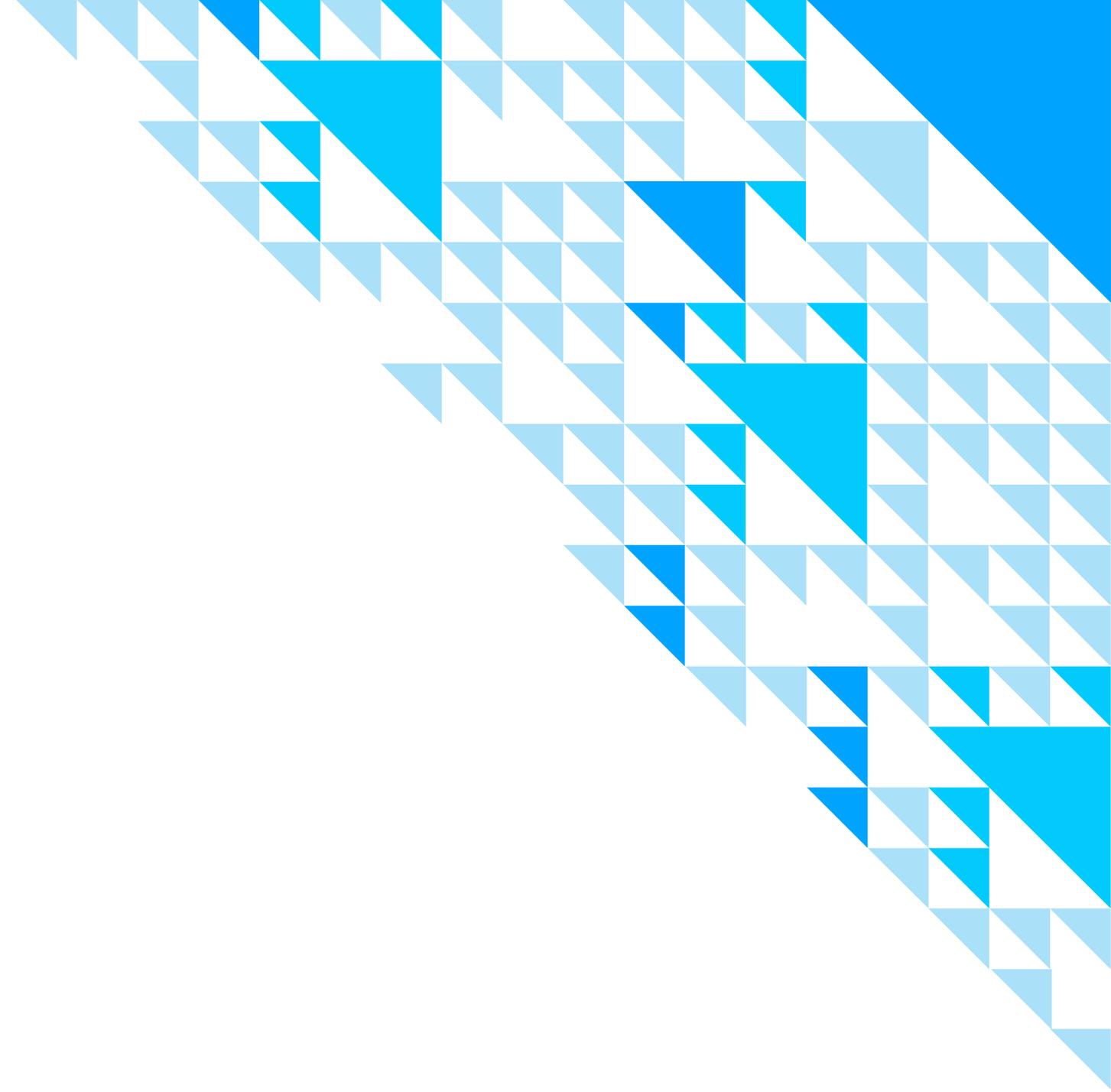
 Denotes non-US investment; the remainder of logos shown are US-based investments.

<sup>1</sup> As of November 1, 2022; excludes investments in deals categorized as "Other/Seed"

# Q&A



Thank you





GTCR

# Firm Overview Presentation to ARMB

*December 2022*

# GTCR

*This Firm Overview and its contents are strictly confidential and highly proprietary. By accepting this Firm Overview, you agree to keep the information contained herein confidential and not to disclose such information to any unaffiliated person or entity. Unauthorized use or disclosure of this Firm Overview or any part hereof is strictly prohibited. No portion of this Firm Overview may be reproduced or distributed in any form without the express written approval of GTCR LLC ("GTCR").*

*This Firm Overview is for the sole purpose of providing information about private equity funds sponsored by GTCR or its affiliates (the "Funds") and their respective portfolio investments. Except as otherwise noted, references to a specific Fund include each of such Fund's parallel funds and alternative investment funds, and may not reflect the actual performance of any particular investor in such fund. This Firm Overview (including performance data herein) does not include information with respect to co-investment funds managed by GTCR or its affiliates or GTCR Capital Partners, L.P., a mezzanine debt fund founded by affiliates of GTCR in 1999 and terminated in 2011. See Appendices A-B for important information with respect to the Funds and the information contained in this Firm Overview.*

*This Firm Overview is not an offer to sell or a solicitation of an offer to buy an interest in any Fund or any other fund. A private offering of interests in a fund will only be made pursuant to the applicable fund's offering documents. The information contained in this Firm Overview may not be relied on in any manner as legal, tax or investment advice. Please refer to GTCR's Form ADV for additional important information regarding GTCR and the Funds.*

*Information provided in this Firm Overview with respect to any Fund and portfolio investments made by such Fund, including the past performance of such Fund and portfolio investments, is provided solely to illustrate GTCR's investment experience and certain processes and strategies used by GTCR in the past with respect to the Funds. Performance information relating to GTCR's prior investments is not intended to be indicative of any Fund's or any other fund's future performance and historical trends may not continue throughout the life of the Funds. There can be no assurance that any Fund or future fund will achieve comparable results or that investors in a fund will not lose any or all of their invested capital. Investments made in the future may not be comparable in quality or performance to the investments described herein.*

*Information provided in this Firm Overview with respect to certain ESG-DEI initiatives is provided for discussion purposes only. Except as set forth herein, GTCR makes no claim to adhere to any particular ESG-DEI framework and there is no assurance that GTCR will engage in any particular practice that other parties may implement. There can be no assurances that GTCR will be able to implement its ESG-DEI initiatives, or that the ESG-DEI initiatives will be successful. There can also be no assurance that projected ESG results will be attained within the proposed timing or manner set forth herein or at all, and actual results may be significantly different from such forward looking statements herein. GTCR's ability to influence and exercise control over the companies in which it invests may vary depending on the investment structure and terms. In cases where GTCR determines it has limited ability to conduct diligence or to influence and control the consideration of ESG issues in connection with an investment, GTCR will apply those elements that it determines to be practicable.*

***Economic and market conditions are continuously evolving as a result of the ongoing COVID 19 pandemic, and the ultimate impact of the outbreak could have a significant adverse impact and result in losses to the Funds and certain of its portfolio companies. To the extent conditions worsen, the effects of COVID 19 may have a further adverse impact on asset prices, public and private markets, the availability of credit and other capital to businesses and overall economic and commercial conditions, all of which could impact the future performance of the Funds and certain of their respective portfolio companies. The ultimate impact of COVID 19 on global economic conditions, and on the operations, financial condition and performance of any particular industry or business, including individual portfolio companies, remains impossible to predict.***

*There can be no assurance as to the ultimate realized returns with respect to any unrealized investments set forth herein, as actual realized returns will depend on, among other things, future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale, all of which may differ from the assumptions on which the unrealized returns contained herein are based. In addition, this Firm Overview contains certain performance information reflecting the cumulative investment performance across multiple Funds. The cumulative performance information presented herein does not necessarily represent performance achieved by any investor, and reflects investments that were made across multiple Funds in different industries during different economic cycles, with different target investment sizes. Such stated performance, where applicable, reflects neither a specific investment Fund nor a group of investments managed as a single portfolio. The actual return realized by any investor in any Fund may differ materially.*

*Except as otherwise noted, all financial information with respect to the Funds is presented As of June 30, 2022. Certain information contained in this Firm Overview represents or is based upon forward-looking statements or information which can be identified by the use of terms such as "may," "will," "should," "could," "would," "predicts," "potential," "continue," "expects," "anticipates," "projects," "future," "targets," "intends," "plans," "believes," "estimates" (or the negatives thereof) or other variations thereon or comparable terminology. Any projections, forecasts or estimates contained herein are all forward-looking statements. Forward looking statements are subject to a number of risks and uncertainties, some of which are beyond the control of GTCR, including among other things, changing factors, such as those affecting the markets generally or those affecting particular industries or investments. Actual results, performance, prospects or opportunities could differ materially from those expressed in or implied by the forward-looking statements. Additional risks of which GTCR is not currently aware also could cause actual results to differ. In light of these risks, uncertainties and assumptions, you should not place undue reliance on any forward-looking statements. Statements contained in this Firm Overview (including those relating to current and future market conditions and trends in respect thereof) that are not historical facts are based on current expectations, estimates, projections, opinions and/or beliefs of GTCR, and, along with the forward-looking events discussed in this Firm Overview, may not occur.*

*Certain information contained in this Firm Overview has been obtained from published and non-published sources and has not been independently verified by GTCR. Although GTCR believes this information to be accurate, it does not assume responsibility for the accuracy of such information. GTCR expressly disclaims any obligation or undertaking to update or revise any information contained in this Firm Overview. The pending transactions discussed herein, including transactions currently subject to definitive agreements, remain subject to a number of contingencies, including but not limited to customary closing conditions. The terms and expected proceeds of pending transactions reflect GTCR's current expectations based on the relevant transaction documents and other available information, but there can be no assurance that the pending investments or sales will be completed on GTCR's anticipated timeline or terms.*

# Table of Contents

**I**

**II**

**III**

**IV**

Executive  
Summary

Investment  
Strategy

Investment  
Committee  
Process

Organization

*I*

# Executive Summary

# ARMB Historical Partnership with GTCR

- ARMB has been a valued investor with GTCR for over 20 years, having invested in each of GTCR's last eight flagship funds

	Fund VI	Fund VII	Fund VIII	Fund IX	Fund X	Fund XI	Fund XII	Fund XIII	Fund XIV
Fund Size (\$M)	\$870	\$2,000	\$1,837	\$2,750	\$3,233	\$3,941	\$5,408	\$7,895	\$9,250
Vintage	1998	2000	2003	2006	2011	2014	2017	2020	target
Gross IRR	4.0%	34.9%	41.9%	20.3%	29.3%	47.2%	35.1%	59.3%	
Gross MOIC	1.1x	3.2x	2.0x	2.2x	2.6x	5.1x	2.1x	1.4x	
Net IRR	-3.8%	25.7%	22.7%	13.9%	21.6%	38.8%	35.6%	193.9%	
Net MOIC	0.9x	2.4x	1.7x	1.8x	2.2x	4.0x	1.8x	1.5x	

See [Appendix B](#) for additional information with respect to Gross IRR, Gross MOIC, Net IRR and Net MOIC. The actual return realized by any investor in the Funds, including ARMB, may differ materially from those reflected or contemplated in the data presented in this Firm Overview. See [Appendix A](#) for additional information with respect to the performance of all of GTCR Funds. *Past performance is not a guarantee of future results. Any investment in a fund entails a risk of loss.*



## Target \$9.25B in Limited Partner Commitments

- Cumulative target investment size in excess of \$250M
- Significant alignment of interest with \$450M minimum GP commitment anticipated
- Fundraising Timeline
  - August 2022: Launched fundraising
  - October 14: LPA comments and side letter requests due
  - November 14: Draft subscription documents due
  - November 28: Executed subscription documents due
  - December 2022 – January 2023: Primary close
  - Spring 2023: Final close

This summary is not an offer to sell or a solicitation of an offer to buy an interest in Fund XIV or any other fund. A private offering of interests in a fund will only be made pursuant to the applicable offering documents. The terms described herein are for informational and discussion purposes only, are not intended to be complete and are qualified in their entirety by reference to the applicable offering documents, when available. There can be no assurances that any plans or expectations will occur as described herein, or at all.

# Firm Summary

- Founded in 1980, invested +\$24B during 40-year history across 14 equity funds
- GTCR Funds have generated cumulative Gross IRR of 35.6% and Net IRR of 26.3%<sup>1</sup>
- Growth-oriented investor focused on being on right side of change, such as in technology and tech-enabled services and other areas of major change like medical technologies and life sciences
- Long tenured investment leadership group
  - Strong organizational consistency – Investment Committee averages 18 years at GTCR
  - Partnership model of governance, investment decision making and economic participation
  - Chicago HQ with offices in New York City and West Palm Beach
  - +80<sup>2</sup> investment professionals with a collaborative, fact-based culture
  - Commitment to investment in and best practices for ESG and DEI
- Disciplined, rigorous, repeatable investment approach driven by The Leaders Strategy™



**The Leaders Strategy™** – *Finding and partnering with exceptional management leaders in core domains to identify, acquire and build market-leading companies through transformational acquisitions and organic growth*

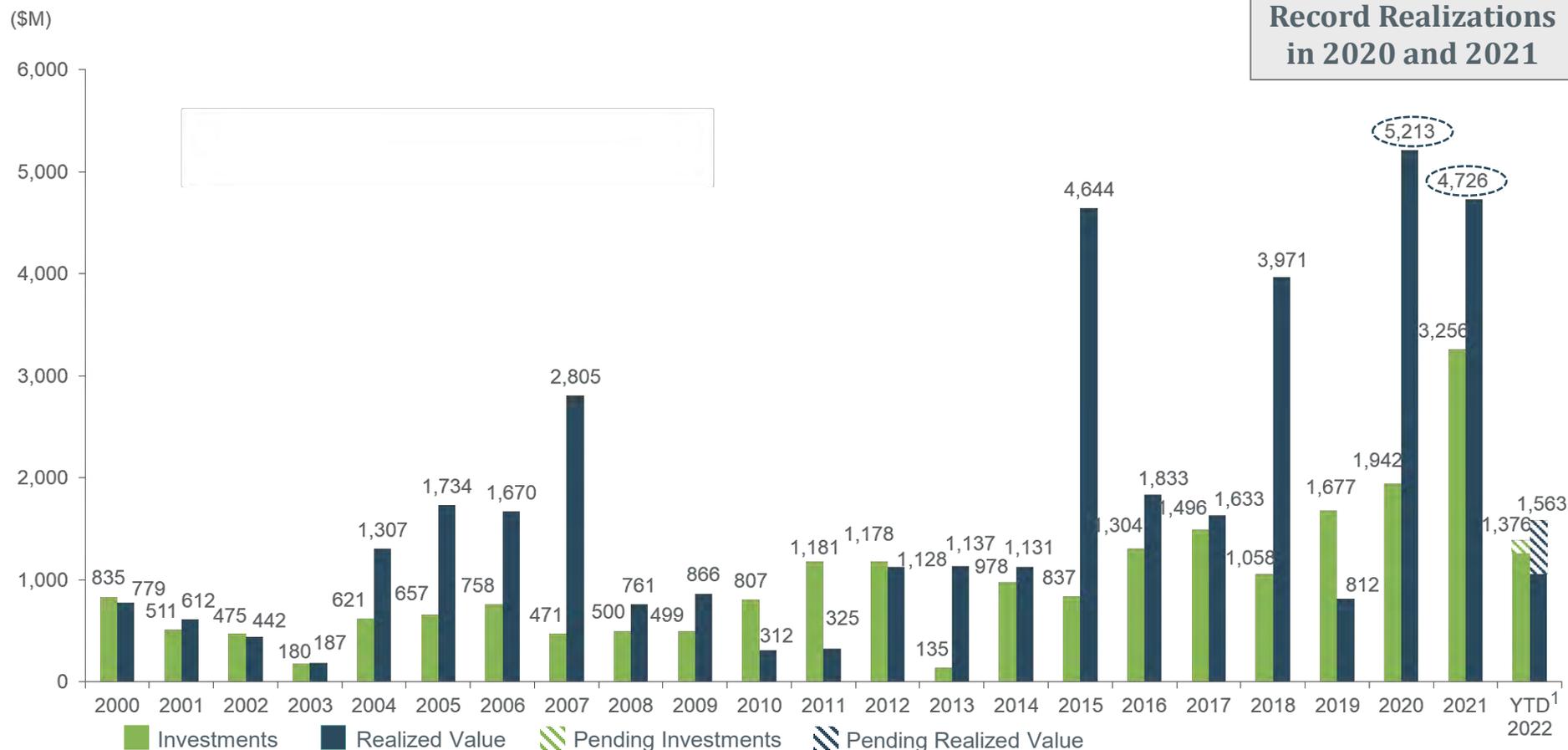
<sup>1</sup> Information above represents Hypothetical Performance. See [Appendix B](#) for additional information with respect to GTCR Funds, Gross IRR and Net IRR. The cumulative return data presented reflects investments that were made across multiple Funds as of June 30, 2022, in different industries during different economic cycles, with different target investment sizes and does not necessarily represent performance achieved by any investor. Such stated performance reflects neither a specific Fund nor a group of investments managed as a single portfolio. The actual return realized by any investor in the Funds may differ materially from those reflected or contemplated in the data presented in this Firm Overview. See [Appendix A](#) for additional information with respect to the performance of individual GTCR Funds. There can be no assurance that GTCR will be able to implement its ESG-DEI initiatives, or that the ESG-DEI initiatives will be successful.

<sup>2</sup> Headcount information pro forma for expected hires and departures as August 2022.

Past performance is not a guarantee of future results. Any investment in a fund entails a risk of loss.

# Successful Track Record of Investments and Realizations Across Time and Through Economic Cycles

2000 - YTD 2022



<sup>1</sup> YTD 2022 as of August 17 2022. Investments includes Fund XIII's pending PPC – PPT Add-On Acquisition (\$100M) and Fund XII's pending CommerceHub – ChannelAdvisor Add-On Acquisition (\$38M). Realized Value includes Fund XIII's pending partial sale of JSSI (\$575M). The consummation of any pending sale or investment remains subject to regulatory approvals and customary closing conditions. There can be no assurance that the transactions will ultimately be consummated on the terms indicated herein, if at all.

See [Appendix B](#) for more information with respect to Investments and Realized Value See [Appendix A](#) for more information with respect to Investments and Realized Value by Fund. Investments were made and Realized Value was achieved across multiple Funds, in different industries during different economic cycles, with different target investment sizes and stated performance reflects neither a specific Fund nor a group of investments managed as a single portfolio The extent of the impact of COVID 19 on the Funds' ability to source, diligence and execute new investments, and to manage, finance and exit investments in the future, remains impossible to predict. *Past performance is not a guarantee of future results Any investment in a fund entails a risk of loss.*

II

# Investment Strategy

# The Leaders Strategy™

**The Leaders Strategy™** – *Finding and partnering with exceptional management leaders in core domains to identify, acquire and build market-leading companies through transformational acquisitions and organic growth*



- The Leaders Strategy™ has been at the core of our investment approach for decades
- Domain expertise helps lead to both unique investment thesis development and outstanding CEOs which, paired together, we believe help drive strategic transformation and equity value creation

This information is for illustrative purposes only. There is no guarantee that GTCR will be able to achieve its objectives or intended results.

# Building Domain Expertise as the Foundation

1

Execute  
Transformational  
Opportunities

Drive Better  
Investment  
Results

## *Financial Services & Technology*

- Global Payments
- Asset Management and Distribution
- Capital Markets, Market Data and Analytics
- Insurance, Insurance Technology and Distribution
- Financial Technology, Data and Software
- Mortgage / Housing

## *Healthcare*

- Life Sciences
- Pharma & Specialty Chemicals
- Medtech / Medtech Services
- Healthcare Services & Payors
- Healthcare IT

## *Technology, Media & Telecommunications*

- Software / Online Services
- Telecom & Networks
- Data / Info Services
- Marketing Technology / Digital Media
- Government Services / Aerospace & Defense

## *Business & Consumer Services*

- Consumer Subscription Services
- Recurring Business Services
- Packaging / Specialty Materials



GTCR seeks to invest in growing, recession resilient industries with attractive margins, high cash flow conversion, recurring revenue and opportunities for strategic M&A

There is no guarantee that GTCR or any investment vehicle will be able to achieve its objectives or intended results.

# Forming “Management Start-Ups”

1

Execute Transformational Opportunities

Drive Better Investment Results

- Many GTCR investments begin as “Management Start-Ups”
- Partnerships built to find and execute transactions
- Recognized by CEOs as a key differentiator
- Dedicated commitment of CEO and GTCR time and resources to research, diligence and execute a Platform Acquisition
- Typically invest \$1 – 5 million over 12 – 36 months
- Forming these portfolio companies frequently can lead to proprietary platform deal opportunities
- +60 Management Start-Ups<sup>1</sup> since 2000
- Approximately three out of four Management Start-Ups execute on a Platform Acquisition



<sup>1</sup> Management Start-Ups in Funds VII–XIII and SGF as of June 30, 2022.

See [Appendix B](#) for additional information with respect to Platform Acquisition and Management Start-Ups. The portfolio companies identified are not representative of all active or prior GTCR portfolio companies and have been selected for illustrative purposes only in order to provide examples of investments formed through Management Start-Ups.

# Repeating with GTCR Management Teams

1

Execute Transformational Opportunities

Drive Better Investment Results

Michael Mulhern					
Jack Pearlstein					
Ed Fiorentino					
Tim Whall					
Jim Henderson					
Bernd Brust					
Ed Evans					
Phil Spencer					
Doug Bergeron					
Dan Slipkovich					
Ken Bajaj					
Steve Kerrigan					
Bipin Shah					

The list above represents the CEOs and CFOs of GTCR portfolio companies in Funds VII-XIII with whom GTCR has partnered with more than one time. This information is for illustrative purposes only. There is no guarantee that GTCR and/or a portfolio company management team will be able to achieve a stated objective or intended result, or that GTCR will be able to partner with any CEO and/or CFO more than one time.

# Driving Value Through Transformation



Domain expertise, exceptional management leaders and a unique investment thesis can help lead to differentiated investment opportunities

## *Identify Under-Managed Businesses*

- Identify and acquire non-core assets from corporate enterprises
  - Approximately 1/3 of capital invested since 2000<sup>1</sup> has been in companies that completed a corporate carve-out
- Create stand-alone enterprise and reposition within industry
- Accelerate growth by improving sales execution
- Improve efficiency by focusing on performance metrics and accountability
- Upgrade infrastructure and operations to position for public / strategic exit

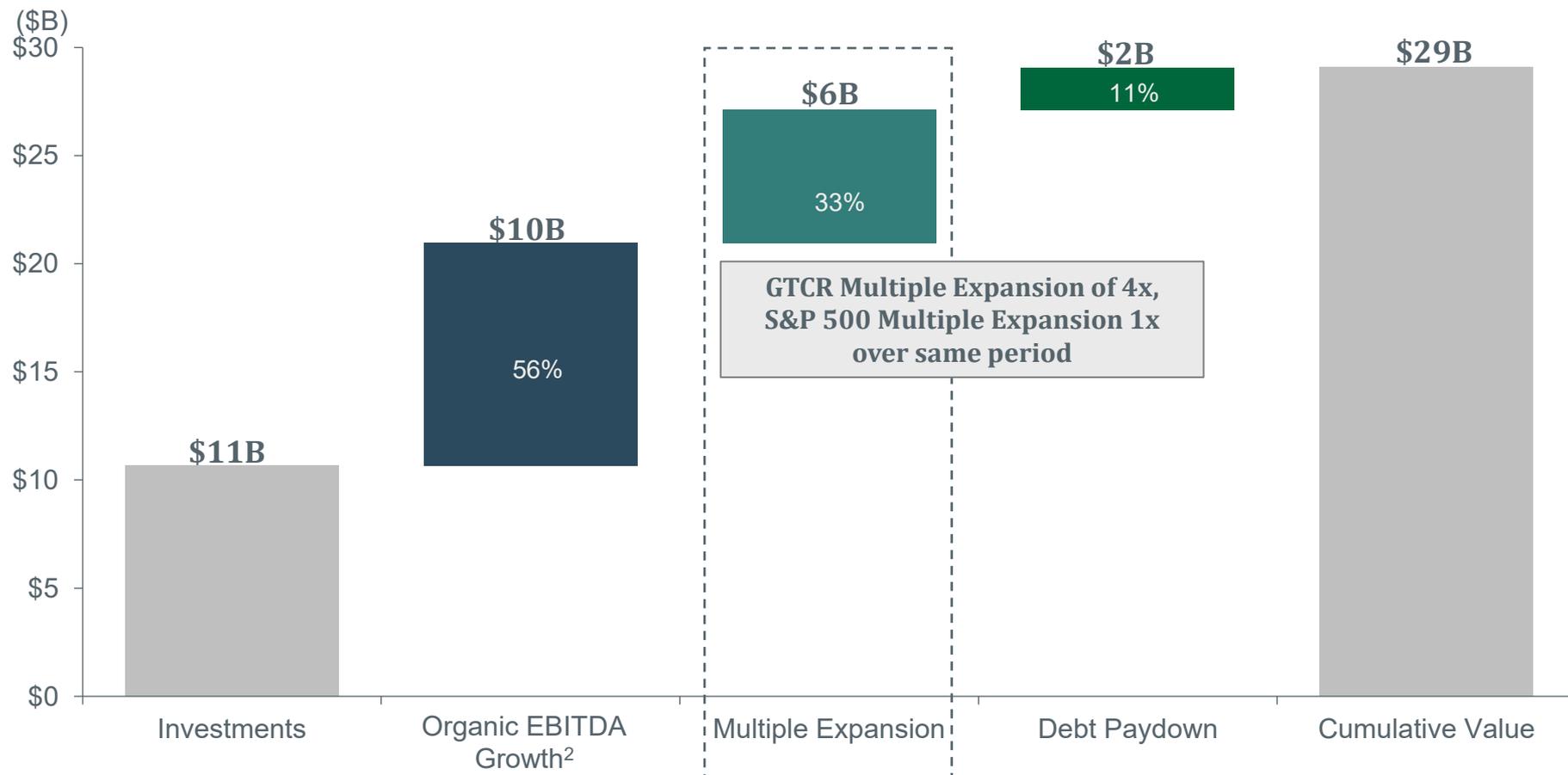
## *Add-On Acquisitions Build Strategic Significance*

- Expand geographic, customer or product reach
- Enhance revenue growth
- Execute cost synergies
- Facilitate more efficient capital structures
- Bring world-class management leadership to lower-middle market companies

<sup>1</sup> Capital invested by Funds VII–XIII and SGF As of June 30, 2022. Excludes Discontinued Management Start-Ups and Management Start-Ups that have not completed an acquisition. This information is for illustrative purposes only. There is no guarantee that GTCR will be able to achieve its objectives or intended results.

# Generating Investment Returns through Organic EBITDA Growth and Multiple Expansion

Realized Investments<sup>1</sup>; As of June 30, 2022



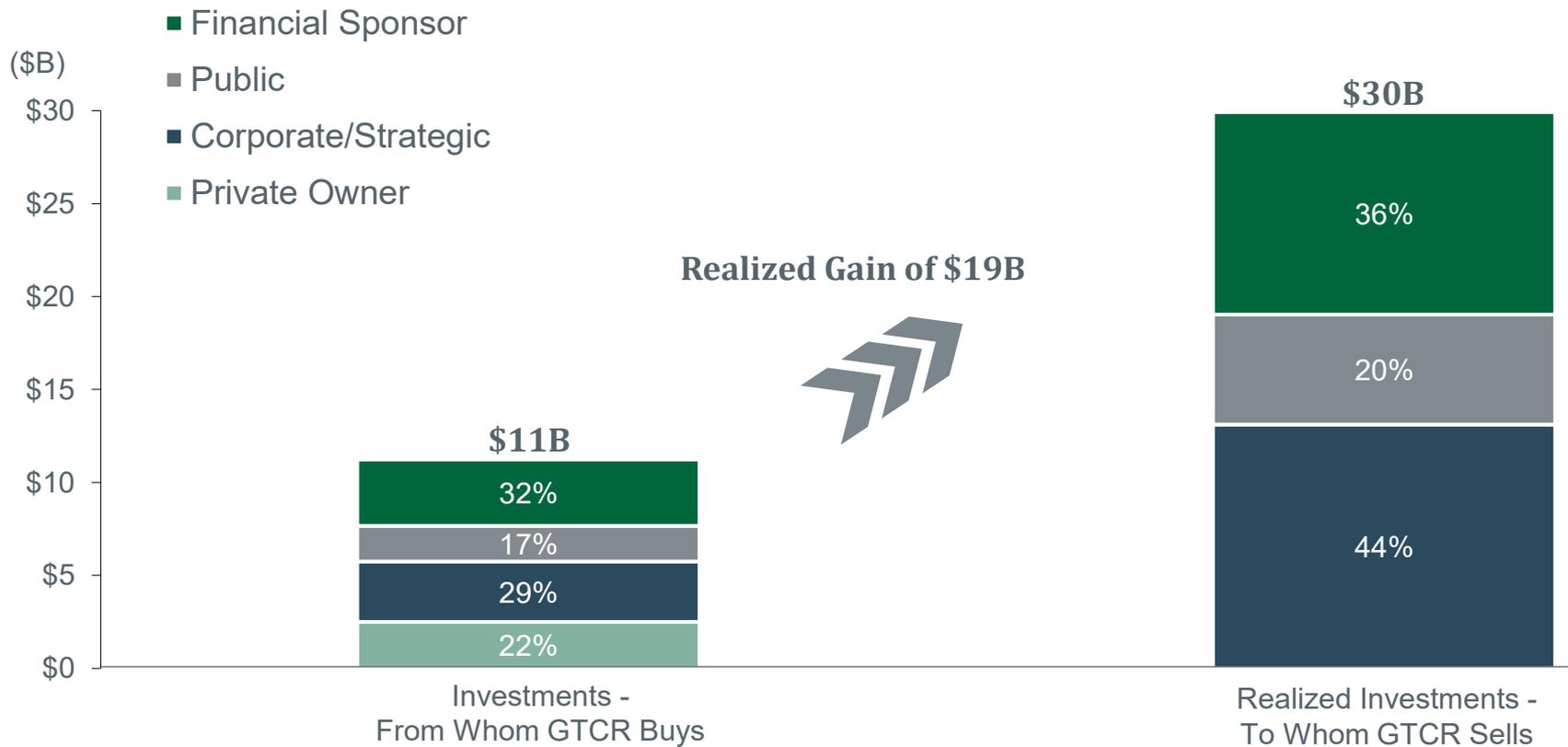
<sup>1</sup> Realized Investments: Funds VII–XIII and SGF, including any remaining Unrealized Value associated with remaining escrows or other contingent consideration. Excludes Discontinued Management Start-Ups and HomeBanc, Ironshore, PrivateBancorp and Triad, for which GTCR believes EBITDA was not an applicable valuation metric.

<sup>2</sup> Organic EBITDA Growth means EBITDA Growth excluding acquisitions and divestitures.

The above figures reflect GTCR's determinations as to the degree to which the foregoing elements contributed to equity value creation, including GTCR's estimation of Multiple Expansion compared to S&P 500 Multiple Expansion over the same period, and are presented on a gross basis. With respect to the calculation of S&P 500 Multiple Expansion, underlying information was obtained from S&P CapIQ through Jun-22. While GTCR has made these determinations in good faith, any such determinations are necessarily subjective. Were a similar analysis to be performed by another party, such party might assign different weightings to such elements, or might give weightings to elements not specified above. See [Appendix B](#) for additional information with respect to Investments, Realized Investments, Debt Paydown, Multiple Expansion, EBITDA Growth, Cumulative Value, SSNOCF and S&P 500 Data. Realized Gain and Cumulative Value is reflected at the Fund level, before the deduction of Fund level management fees, expenses or any carried interest to the Funds' respective general partners, all of which in the aggregate may be substantial. This information is for illustrative purposes only. There is no guarantee that GTCR will be able to achieve its investment objectives or intended results. *Past performance is not a guarantee of future results. Any investment in a fund entails a risk of loss.*

# Building Strategic Significance Helps Maximize Values on Exit

Realized Investments<sup>1</sup>; As of June 30, 2022



<sup>1</sup>Realized Investments: Funds VII–XIII and SGF, including any remaining Unrealized Value associated with remaining escrows or other contingent consideration. Excludes Discontinued Management Start-Ups. See [Appendix A](#) and [Appendix B](#) for additional information with respect to Investments, Realized Investments and Unrealized Value. Realized Gain and Cumulative Value is reflected at the Fund level, before the deduction of Fund level management fees, expenses or any carried interest to the Funds' respective general partners, all of which in the aggregate may be substantial. This information is for illustrative purposes only. There is no guarantee that GTCR will be able to achieve its investment objectives or intended results. *Past performance is not a guarantee of future results. Any investment in a fund entails a risk of loss.*

*III*

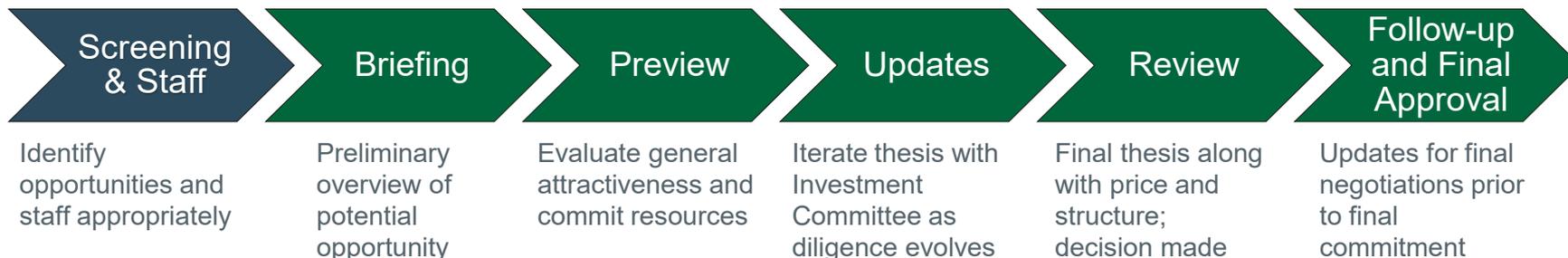
# Investment Committee Process

# Approaching the Investment Committee Process Comprehensively

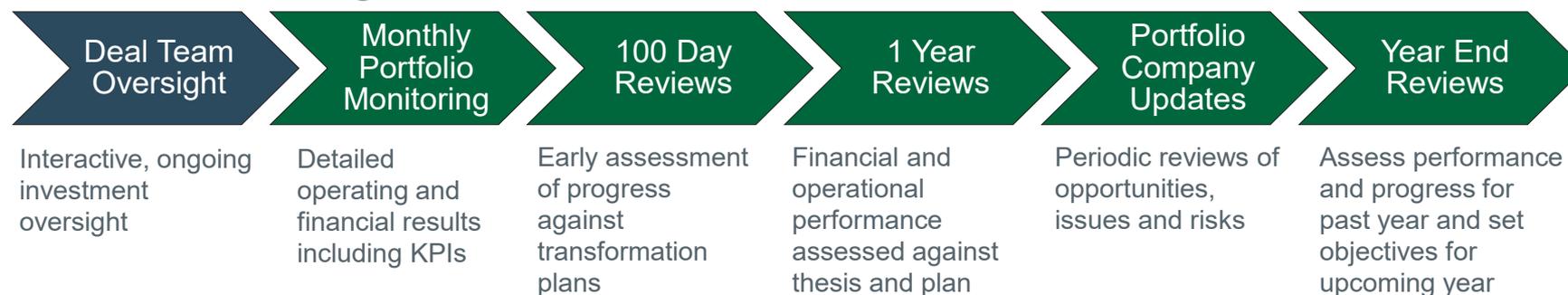


➤ *Underwriting and Portfolio Management include business, operations and financial reviews with applicable ESG components*

## Underwriting



## Portfolio Management



**Rigorous**

**Repeatable**

**Consistent**

This information is for illustrative purposes only.

# Summary

<b>Raised over \$30 billion</b> across 14 investment funds during 40+ year history	<b>Growth-oriented investor</b> with a focus on <b>outperformance</b>	<b>Enduring franchise</b> with commitment to <b>disciplined,</b> <b>rigorous, repeatable</b> investment approach
<b>Long-tenured</b> investment leadership group	<b>Robust, professional infrastructure</b> across all firm operations	<b>Persistent track record</b> of strong investment returns <b>across economic cycles</b>



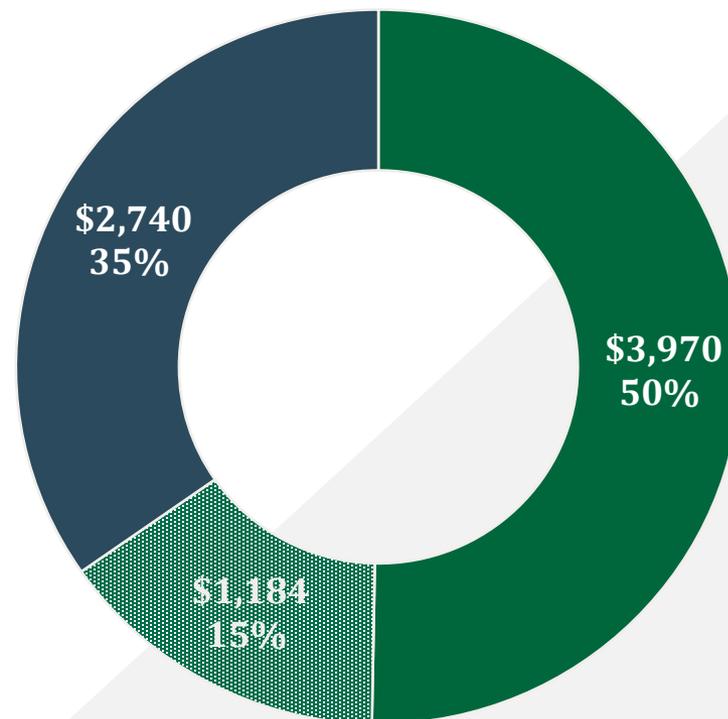
**The Leaders Strategy™** – *Finding and partnering with exceptional management leaders in core domains to identify, acquire and build market-leading companies through transformational acquisitions and organic growth*

<sup>1</sup> As of June 30, 2022

Past performance is not a guarantee of future results. Any investment in a fund entails a risk of loss.

# Fund XIII Status as of Aug-22

- 2020 Vintage
- \$7.5B in LP commitments and \$0.4B in GP commitments
- Ten Platform Acquisitions
- One Management Start-Up actively pursuing opportunities
- 55% of commitments have been called<sup>1</sup> or recycled to date
- 2 of 10 Platform Acquisitions have achieved significant liquidity



- Committed Capital<sup>2</sup>
- Reserved for Add-On Investments
- Uncommitted Capital

<sup>1</sup> Includes amounts on Fund XIII's revolving line of credit to be called. See footnote 2 for more information.

<sup>2</sup> Committed Capital is inclusive of \$2.9B capital called and the outstanding balance on Fund XIII's revolving line of credit of \$1.1B. The outstanding balance on Fund XIII's revolving line of credit of \$1.1B includes \$498M related to the Platform Acquisition of Experity, \$344M related to the Platform Acquisition of PathGroup, \$124M related to additional funding to Fiber Broadband Investments, and various other fund expenses incurred to-date.

*IV*

# Organization

# Deep & Long-Tenured Bench of Senior Talent

12

Investment Committee

23

Managing Directors

700+

Acquisitions Completed  
Since 2000

82

Investment Team

63

Non-Investment Team

145

Total Firm

- **Long-tenured group** of Investment Committee Members, average tenure of **18 years**
- Experienced, skilled investment teams and **apprentice-style development**
- **Culture of respect, collaboration and individual impact** with a fact-based, consensus approach to investment decisions
  - Dedicated capital markets team leading all portfolio company debt financings
  - Finance and Accounting team heading IR, portfolio monitoring, valuations and financial reporting
  - In-house legal and compliance team responsible for deal support, portfolio company assistance and regulatory compliance as a registered investment advisor
  - Priority of continuing to enhance the diversity of our team to reflect varied experiences and perspectives
- **Strict adherence to rigorous investment committee process**

# Senior Leadership Team

**300+**  
Cumulative Years  
at GTCR

**18+ Years**  
Average GTCR Tenure  
Fund XIII Investment  
Committee

**45+**  
Average Age

## Fund XIII Investment Committee MDs

Name	Age <sup>1</sup>	Joined GTCR	Education	Prior Experience
Dean S. Mihas (Co-CEO / Healthcare group)	55	2001	Illinois-Chicago BS Harvard MBA	McKinsey, Delray Farms (Founder / CEO)
Collin E. Roche (Co-CEO / FST group)	51	1996	Williams College BA Harvard MBA	Everen Securities, Goldman Sachs
Mark M. Anderson (Co-Head of TMT group)	47	2000	Virginia BS Harvard MBA	Bowles Hollowell
Craig A. Bondy (Co-Head of TMT group)	49	2000	Texas BBA Stanford MBA	Credit Suisse First Boston
James E. Bonetti (Head of Capital Markets)	45	2017	Northeastern BS Harvard MBA	Morgan Stanley, Goldman Sachs
Aaron D. Cohen (Head of FST group)	46	2003	Illinois BS	Hicks Muse, Salomon Smith Barney
Sean L. Cunningham (Co-Head of Healthcare group)	47	2001	Dartmouth AB and BE Wharton MBA	Boston Consulting Group
Ben J. Daverman (Co-Head of Healthcare group)	44	2008	Colgate BA Wharton MBA; UPenn MB	Alta Partners, J.P. Morgan
David A. Donnini (Head of BCS group)	57	1991	Yale BA Stanford MBA	Bain
Michael S. Hollander (FST group)	43	2008	Wharton BS	Welsh, Carson, Anderson & Stowe, Fremont Partners
Stephen J. Jeschke (TMT group)	41	2011	Illinois BA Harvard MBA	Bain
Anna May L. Trala (Chief Financial Officer)	56	2003	Goldey Beacom BS	Ernst & Young
John D. Kos (SGF)	40	2006	Illinois BS Harvard MBA	Citigroup
Luke J. Marker (Healthcare group)	37	2009	Kalamazoo College BA Harvard MBA	GTCR
Stephen P. Master (SGF)	38	2008	Northwestern BA UChicago MBA	GTCR
KJ McConnell (FST group)	37	2014	Indiana BS Harvard MBA	TPG Capital
Don McDonough (SGF)	48	2022	Princeton BS Columbia MBA	JLL Partners
Jeff B. Heh (Capital Markets)	42	2013	Richmond BS	J.P. Morgan
Travis J. Krueger (Portfolio Support & Data)	42	2005	Indiana BS UChicago MBA	PricewaterhouseCoopers
Melissa M. Mounce (Leadership Talent & Diversity)	54	2019	Illinois State BA Northern Illinois MBA	Baird Capital
Manoj Narayanan (Technology and Digitization)	46	2022	University of Calicut Indian Institute of Mgmt MBA	Vista Equity Partners
Jodi Rubenstein (Investor Relations)	37	2022	Michigan BBA NYU MBA	Goldman Sachs
Joe Rubino (Information Security)	45	2022	Saint Joseph's BS	CIA, Bloomberg Industry Group

## Other MDs

<sup>1</sup> Headcount information as of October 18, 2022.

# Portfolio Company Resources

➤ Our functional leaders along with our new Portfolio Resources Group support our management teams

## Functional Leaders

*Functional leaders share best practices and integrate portfolio companies with GTCR expectations*

**Finance and Accounting**  
Anna May Trala

**Legal & Compliance**  
Jeff Wright

**Leadership and Diversity**  
Melissa Mounce

**Marketing and Communications**  
Andrew Johnson

**Information Technology**  
Faraz Ahmed

**ESG - DEI**  
Akash Kar

## Portfolio Resources Group (PRG)

*Dedicated resources to provide support to portfolio companies in specific functional areas*

**Portfolio Support and Data**  
Travis Krueger

**Technology and Digitization**  
Manoj Narayanan

**Security and Data Privacy**  
Joe Rubino

**Procurement**  
Katelyn Moorhead

**To Be Added**  
Tax | Growth Enablement  
Cost Optimization | PMO / Carve-outs

*Appendices*

# Appendix A

# Performance Detail

As of June 30, 2022

(\$M) Fund	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII <sup>2</sup>	XIII <sup>2</sup>	SGF <sup>2</sup>	GTCR Funds <sup>3</sup>
Vintage Year	1980	1984	1987	1994	1996	1998	2000	2003	2006	2011	2014	2017	2020	2022	
Fund Size	\$60	\$100	\$235	\$312	\$521	\$870	\$2,000	\$1,837	\$2,750	\$3,233	\$3,941	\$5,408	\$7,895	\$2,203	\$31,364
<u>Realized Investments</u>															
Invested Capital	\$72	\$119	\$230	\$316	\$650	\$1,053	\$1,645	\$1,923	\$2,643	\$3,147	\$1,503	\$918	\$5	\$0	\$14,224
Realized Value	880	475	1,630	810	1,283	1,120	5,197	3,787	5,703	8,072	5,150	2,047	5	0	36,159
Unrealized Value	0	0	0	0	0	0	0	0	0	3	776	1,599	0	0	2,378
Cumulative Value	880	475	1,630	810	1,283	1,120	5,197	3,787	5,703	8,074	5,926	3,646	5	0	38,536
Gross Realized IRR	37.7%	27.1%	42.2%	37.3%	17.1%	4.0%	34.9%	41.9%	20.3%	29.3%	46.5%	58.0%	n/m	n/m	35.6%
Gross Realized MOIC	12.3x	4.0x	7.1x	2.6x	2.0x	1.1x	3.2x	2.0x	2.2x	2.6x	3.9x	4.0x	n/m	n/m	2.7x
Net Realized IRR	31.1%	18.4%	31.3%	25.7%	11.1%	-3.8%	25.7%	22.7%	13.9%	21.6%	38.3%	58.8%	n/m	n/m	26.3%
Net Realized MOIC	11.7x	3.7x	5.6x	2.1x	1.8x	0.9x	2.4x	1.7x	1.8x	2.2x	3.1x	3.5x	n/m	n/m	2.4x
<u>Total Investments</u>															
Invested Capital	\$72	\$119	\$230	\$316	\$650	\$1,053	\$1,645	\$1,923	\$2,643	\$3,147	\$3,358	\$4,854	\$4,006	\$217	\$24,233
Realized Value	880	475	1,630	810	1,283	1,120	5,197	3,787	5,703	8,072	8,902	3,717	656	0	42,232
Unrealized Value	0	0	0	0	0	0	0	0	0	3	8,346	6,391	4,756	221	19,717
Cumulative Value	880	475	1,630	810	1,283	1,120	5,197	3,787	5,703	8,074	17,248	10,109	5,412	221	61,950
Gross IRR	37.7%	27.1%	42.2%	37.3%	17.1%	4.0%	34.9%	41.9%	20.3%	29.3%	47.2%	35.1%	59.3%	n/m	35.6%
Gross MOIC	12.3x	4.0x	7.1x	2.6x	2.0x	1.1x	3.2x	2.0x	2.2x	2.6x	5.1x	2.1x	1.4x	n/m	2.6x
Net IRR	31.1%	18.4%	31.3%	25.7%	11.1%	-3.8%	25.7%	22.7%	13.9%	21.6%	38.8%	35.6%	193.9%	n/m	26.3%
Net DPI	11.7x	3.7x	5.6x	2.1x	1.8x	0.9x	2.4x	1.7x	1.8x	2.2x	2.0x	0.5x	0.1x	n/m	1.6x
Net MOIC	11.7x	3.7x	5.6x	2.1x	1.8x	0.9x	2.4x	1.7x	1.8x	2.2x	4.0x	1.8x	1.5x	n/m	2.3x
<u>Upper Quartile Benchmark<sup>1</sup></u>															
Net IRR	42.0%	30.2%	14.2%	13.7%	11.8%	14.7%	23.1%	16.3%	17.8%	21.2%	29.9%	33.7%	16.1%	n/m	n/m
Net DPI	5.8x	4.5x	2.3x	1.8x	1.8x	2.0x	2.2x	2.1x	2.2x	2.0x	1.4x	0.4x	0.0x	n/m	n/m
Net MOIC	5.9x	4.5x	2.3x	1.8x	1.8x	2.0x	2.3x	2.1x	2.2x	2.4x	2.4x	1.9x	1.1x	n/m	n/m

<sup>1</sup> Benchmark data for "U.S. Buyouts" as of March 31, 2022 provided by Cambridge Associates for vintage years subsequent to 1986. See [Appendix B](#) for additional information with respect to benchmark data, including benchmark data for vintage years prior to 1986.

<sup>2</sup> For purposes of calculating Net IRR, Net DPI, Net MOIC, Net Realized IRR and Net Realized MOIC, GTCR uses the date on which capital calls are due from limited partners, which for Fund XII, Fund XIII and SGF only may be up to 270 days after the applicable investment date (as opposed to up to 90 days after the applicable investment date for Funds X and XI, and on or around the applicable investment date for Funds I-IX). As a result, Fund XII, Fund XIII and SGF figures above represent leveraged returns. Unlevered returns as of Jun 22 for Fund XII are 25.4%, 0.5x and 1.9x for Net IRR, Net DPI and Net MOIC, respectively. Unlevered returns as of Jun 22 for Fund XIII are 37.2%, 0.1x and 1.2x for Net IRR, Net DPI and Net MOIC, respectively. This hypothetical calculation estimates the Net IRR, Net DPI and Net MOIC of Fund XII and Fund XIII without the impact of a capital call line. Please see [Appendix B](#) for more information with respect to the calculation of Unlevered Net IRR. Please see Fund XII, Fund XIII and SGF Performance Data in [Appendix B](#) for additional information with respect to use of leverage.

<sup>3</sup> Data represents aggregate Hypothetical Performance data for Funds I-XIII and SGF. Fund I-XIII and SGF investments were made in different industries during different economic cycles, with different target investment sizes and stated performance reflects neither a specific investment Fund nor a group of investments managed as a single portfolio. The actual return realized by any investor in the Funds may vary based on the timing of capital contributions and distributions and may differ materially from those reflected or contemplated in the data presented.

<sup>4</sup> "n/m" indicates performance that is not calculable or meaningful for the applicable period. In particular, the Net MOIC for Fund XIII currently exceeds Gross MOIC due to the use of the fund-level credit facility and the timing of related capital calls.

See [Appendix B](#) for additional information with respect to Hypothetical Performance, Realized Investments, Realized Value, Unrealized Value, Cumulative Value, Gross Realized IRR, Gross Realized MOIC, Gross IRR, Gross MOIC, Net IRR, Net DPI, Net MOIC, Net Realized IRR and Net Realized MOIC, and with respect to Fund VII, Fund VIII, Fund IX, Fund X, Fund XI, Fund XII, Fund XIII and SGF Performance Data. See page 2 for more information regarding the potential impact of COVID-19 on the Funds and their portfolio investments. The ultimate impact of COVID 19 on global economic conditions, and on the operations, financial condition and performance of any particular industry or business, including individual portfolio companies, remains impossible to predict. *Past performance is not a guarantee of future results. Any investment in a fund entails a risk of loss.*

*Appendices*

# Appendix B

# Definitions and Calculations

**Active Portfolio Companies:** All Fund investments excluding fully realized investments, companies in which GTCR has invested less than \$10 million and companies that have been written-off or written-down to a value of \$1.

**Add-On Acquisitions:** All acquisitions completed by a portfolio company subsequent to the Platform Acquisition.

**Adj EBITDA:** EBITDA adjusted primarily for the effects of nonrecurring or extraordinary items and expected synergies. Adjusted EBITDA is presented inclusive of all acquisitions and exclusive of all divestitures, and is generally calculated on an annualized basis based on available information during the applicable twelve-month measurement period. When EBITDA information is not available with respect to an initial investment (e.g., a corporate carve-out of an operating division that did not previously report stand-alone EBITDA, etc.), GTCR uses an EBITDA estimate that it deems reasonable and appropriate. EBITDA is a non-GAAP accounting metric and is not audited. There can be no assurance that expected synergies will be achieved.

**Benchmark Data:** For the vintage years subsequent to 1986, benchmark data for “U.S. Buyouts” as of March 31, 2022 is provided by Cambridge Associates. Cambridge Associate’s benchmarks are defined as follows: Net IRR – “Upper Quartile (%)” Net DPI - “Distribution to Paid In Capital Multiple (DPI) Upper Quartile” and Net MOIC - “Total Value to Paid In Capital Multiple (TVPI) Upper Quartile.” Cambridge Associates benchmark data is unavailable for the vintage years prior to 1986. As a result, for the vintage years prior to 1986, benchmark data for “U.S. Buyouts” is based upon information from Thomson Reuters (f/k/a Venture Economics) as of December 31, 2013. Thomson Reuters benchmark data is no longer available and, accordingly, has not been updated for periods subsequent to December 31, 2013. The Thomson Reuter’s benchmarks were defined as follows: Net IRR - “IRR upper,” Net DPI - “DPI Upper” and Net MOIC - “TVPI Upper.”

Investors generally cannot invest directly in the Cambridge Associates or Thomson Reuters benchmarks, which are presented for reference purposes only. The Cambridge Associates and Thomson Reuters benchmarks set forth the performance of collections of funds, selected by Cambridge Associates or Thomson Reuters, as applicable, which pursue a leveraged buyout private equity investment strategy. In addition to pursuing a leveraged buyout private equity investment strategy, some or all of these funds may also pursue other types of investments. The returns of the funds included in these benchmarks are net of all applicable fees and carried interest, which may differ from the applicable fees and carried interest charged to the Funds. Funds I–XIII and SGF pursue a leveraged buyout private equity investment strategy, but have made certain investments outside of this strategy and did not invest in the funds comprising the Cambridge Associates or Thomson Reuters benchmarks. GTCR selects the Cambridge Associates or Thomson Reuters vintage year to include based on the date the applicable Fund made its first investment in a portfolio company, not the date on which the first capital call was due from such Fund’s limited partners or any other date. For the foregoing and other reasons, Funds I–XIII and SGF and the Cambridge Associates and Thomson Reuters “U.S. Buyouts” benchmarks are not directly comparable and are provided for informational purposes only. The statistical data regarding the Cambridge Associates and Thomson Reuters benchmarks has been obtained from sources GTCR believes to be reliable.

**Code:** Internal Revenue Code of 1986, as amended.

**Cumulative Value:** Sum of (i) aggregate Realized Value and (ii) Unrealized Value.

**Debt Paydown:** With respect to each investment, GTCR’s calculation of the difference between Net Debt with respect to all acquisitions, including the impact of debt recapitalizations, and Net Debt at exit. Net Debt is based on information provided by the applicable portfolio company management and/or calculated by GTCR after deducting excess cash on the balance sheet. Debt Paydown is not audited and is presented solely to demonstrate GTCR’s estimate of the impact of Debt Paydown on the overall gain or loss with respect to Realized Investments. Additional information with respect to GTCR’s calculation of Debt Paydown is available upon request.

**Discontinued Management Start-Up:** Investments that have been discontinued, sold, transferred to another GTCR Fund or written off in accordance with IRC §165(g) prior to annual revenues exceeding \$5 million.

**EBITDA:** Earnings before interest, tax, depreciation and amortization.

# Definitions and Calculations

**EBITDA Growth / Decline:** With respect to each investment, GTCR's calculation of the difference between Adj EBITDA at the beginning of the applicable period and Adj EBITDA at the end of the applicable period, pro forma for acquisitions and divestitures. EBITDA Growth / Decline is based on information provided by the applicable portfolio company management team and calculated by GTCR after making other adjustments it deems necessary or appropriate. Adj EBITDA acquired or sold during the period as a result of acquisitions or divestitures is generally included or excluded, respectively, on a pro forma basis, at the beginning of such period. EBITDA Growth is not audited and is presented solely to demonstrate GTCR's estimate of the impact of EBITDA Growth on the overall change in Cumulative Value with respect to the investment, or on the overall change in Portfolio Value with respect to the Fund, during the applicable period. Additional information with respect to GTCR's calculation of EBITDA Growth is available upon request.

**Fund VII Performance Data:** Performance information with respect to Fund VII represents the performance of GTCR Fund VII, L.P. and GTCR Fund VII/A, L.P. GTCR Fund VII/A, L.P. could only make an investment in an entity in which GTCR Fund VII, L.P. had also made an investment. Performance information with respect to Fund VII will vary to the extent an investor in GTCR Fund VII, L.P. is not also an investor in GTCR Fund VII/A, L.P.

**Fund VIII Performance Data:** Net IRR, Net DPI and Net MOIC performance information with respect to Fund VIII represents the performance of GTCR Fund VIII, L.P. and GTCR Fund VIII AIV, L.P. only. GTCR Fund VIII/B, L.P. ("Fund VIII/B") is a parallel fund established for non-U.S. and U.S. tax exempt investors which utilizes blocker corporations to reduce the likelihood of such investors being required to recognize income "effectively connected with the conduct of a trade or business within the United States" as defined in Section 864 of the Code. Fund VIII/B represents approximately 14.9% of total commitments to Fund VIII. As of June 30, 2022, Fund VIII/B had the same Gross IRR as GTCR Fund VIII, L.P. and a Net IRR of 21.7%.

**Fund IX Performance Data:** Net IRR, Net DPI and Net MOIC performance with respect to Fund IX represents the performance of GTCR Fund IX/A, L.P. and GTCR Fund IX/A AIV (Ironshore), L.P. only. GTCR Fund IX/B, L.P. is a parallel fund established for non-U.S. and U.S. tax exempt investors which utilizes blocker corporations to reduce the likelihood of such investors being required to recognize income "effectively connected with the conduct of a trade or business within the United States" as defined in Section 864 of the Code. GTCR Fund IX/B, L.P. and GTCR Fund IX/B AIV (Ironshore), L.P. (collectively "Fund IX/B") represent approximately 14.3% of total commitments to Fund IX. As of June 30, 2022, Fund IX/B had the same Gross IRR as Fund IX and a Net IRR of 13.3%.

**Fund X Performance Data:** Net IRR, Net DPI and Net MOIC with respect to Fund X represents the performance of GTCR Fund X/A LP, GTCR Fund X/B LP and GTCR Fund X/A AIV LP only. GTCR Fund X/C LP and GTCR Fund X/C AIV LP (collectively, "Fund X/C") are parallel funds established for non-U.S. and U.S. tax exempt investors which utilize blocker corporations to reduce the likelihood of such investors being required to recognize income "effectively connected with the conduct of a trade or business within the United States" as defined in Section 864 of the Code. Fund X/C represents approximately 22.3% of total commitments to Fund X. As of June 30, 2022, Fund X/C had the same Gross IRR as Fund X and a Net IRR of 21.5%.

**Fund XI Performance Data:** Net IRR, Net DPI and Net MOIC with respect to Fund XI represents the performance of GTCR Fund XI/A LP and GTCR Fund XI/B LP only. GTCR Fund XI/C LP ("Fund XI/C") is a parallel fund established for non-U.S. and U.S. tax exempt investors which utilize blocker corporations to reduce the likelihood of such investors being required to recognize income "effectively connected with the conduct of a trade or business within the United States" as defined in Section 864 of the Code. Fund XI/C represents approximately 20.1% of total commitments to Fund XI. As of June 30, 2022, Fund XI/C had a Gross IRR of 46.9% and a Net IRR of 38.3%.

**Fund XII Performance Data:** Net IRR, Net DPI and Net MOIC with respect to Fund XII represents the performance of GTCR Fund XII/A LP, GTCR Fund XII/B LP and GTCR Fund XII/A AIV LP only. GTCR Fund XII/C LP and GTCR Fund XII/C AIV LP (collectively, "Fund XII/C") are parallel funds established for non-U.S. and U.S. tax exempt investors which utilize blocker corporations to reduce the likelihood of such investors being required to recognize income "effectively connected with the conduct of a trade or business within the United States" as defined in Section 864 of the Code. Fund XII/C represents approximately 20.2% of total commitments to Fund XII. As of June 30, 2022, Fund XII/C had the same Gross IRR as Fund XII and a Net IRR of 35.1%. In accordance with the governing documents of Fund XII, GTCR may provide a capital call notice to investors up to 270 days (as opposed to up to 90 days for Funds X and XI, and on or around the applicable investment date for Funds I-IX) after an investment by Fund XII has been made. As a result Fund XII performance metrics (Net IRR, Net DPI and Net MOIC) represent leveraged return data. The net performance metrics presented herein may have been higher or lower if such leverage were not utilized.

# Definitions and Calculations

**Fund XIII Performance Data:** Net IRR, Net DPI and Net MOIC with respect to Fund XIII represents the performance of GTCR Fund XIII/A LP and GTCR Fund XIII/B LP only. GTCR Fund XIII/C LP (“Fund XIII/C”) is a parallel fund established for non-U.S. and U.S. tax exempt investors which utilize blocker corporations to reduce the likelihood of such investors being required to recognize income “effectively connected with the conduct of a trade or business within the United States” as defined in Section 864 of the Code. Fund XIII/C represents approximately 27.5% of total commitments to Fund XIII. As of June 30, 2022, Fund XIII/C had the same Gross IRR as Fund XIII and a Net IRR of 190.0%. In accordance with the governing documents of Fund XIII, GTCR may provide a capital call notice to investors up to 270 days (as opposed to up to 90 days for Funds X and XI, and on or around the applicable investment date for Funds I-IX) after an investment by Fund XIII has been made. As a result Fund XIII performance metrics (Net IRR, Net DPI and Net MOIC) represent leveraged return data. The net performance metrics presented herein may have been higher or lower if such leverage were not utilized.

**Gross IRR:** Compounded annual internal rate of return based on Investments, Realized Value and Unrealized Value before payment of Fund-level management fees and expenses, income earned on cash and cash equivalents and any carried interest to the Funds’ respective general partners, all of which, in the aggregate, may be substantial, but after payment of expenses directly related to investments (as determined by such general partners). Gross IRR is calculated on a quarterly basis based on the actual quarter during which each Investment and Realized Value occurred and on the Unrealized Value at the end of each applicable quarter. Gross IRR may include Unrealized Values and, accordingly, no limited partner in such Fund has actually received such returns. The Funds may use a revolving line of credit to fund interim limited partner capital contributions in accordance with the governing documents of such Fund. For purposes of calculating Gross IRR, GTCR uses the dates on which the Fund made Investments, not the dates on which Fund capital calls are due from its limited partners. Where Gross IRR is presented for a Subset, Gross IRR is calculated on a quarterly basis based on the actual quarter during which each applicable Investment and Realized Value occurred and the Unrealized Value at the end of each applicable quarter for each applicable portfolio company included in such Hypothetical Performance. Subset Gross IRR is Hypothetical Performance subject to the risks and limitations described herein.

**Gross MOIC:** Multiple based on Investments, Realized Value and Unrealized Value before payment of Fund-level management fees and expenses, income earned on cash and cash equivalents and any carried interest to the Funds’ respective general partners, all of which, in the aggregate, may be substantial, but after payment of expenses directly related to investments (as determined by such general partners). The use of bridge financing in accordance with the terms of the governing documents of the applicable Fund, may increase the Gross MOIC with respect to a particular investment. Gross MOIC may include Unrealized Value and, accordingly, no limited partner in such Funds has actually received such returns. Where Gross MOIC is presented for a Subset, Gross MOIC is calculated on a quarterly basis based on the quotient of (i) the actual cumulative Realized Value and Unrealized Value and (ii) the cumulative Investments made to date across each applicable portfolio company included in such Subset. Subset Gross MOIC is Hypothetical Performance subject to the risks and limitations described therein.

**Gross Realized IRR:** Gross IRR, calculated with respect to Realized Investments.

**Gross Realized MOIC:** Gross MOIC, calculated with respect to Realized Investments.

**GTCR Funds, or Funds:** The Golder, Thoma Fund (“Fund I”); Golder, Thoma, Cressey Fund II, L.P (“Fund II”); Golder, Thoma, Cressey Fund III, Limited Partnership (“Fund III”); Golder, Thoma, Cressey, Rauner Fund IV, L.P (“Fund IV”); Golder, Thoma, Cressey, Rauner Fund V, L.P (“Fund V”); GTCR Fund VI, L.P (“Fund VI”); GTCR Fund VII, L.P and GTCR Fund VII/A, L.P (collectively, “Fund VII”); GTCR Fund VIII, L.P and GTCR Fund VIII/B, L.P (collectively, “Fund VIII”); GTCR Fund IX/A, L.P and GTCR Fund IX/B, L.P (collectively, “Fund IX”); GTCR Fund X/A LP, GTCR Fund X/B LP and GTCR Fund X/C LP (collectively “Fund X”); GTCR Fund XI/A LP, GTCR Fund XI/B LP and GTCR Fund XI/C LP (collectively “Fund XI”) and; GTCR Fund XII/A LP, GTCR Fund XII/B LP and GTCR Fund XII/C LP (collectively “Fund XII”); GTCR Fund XIII/A LP, GTCR Fund XIII/B LP and GTCR Fund XIII/C LP (collectively “Fund XIII”) and GTCR Strategic Growth Fund I/A LP, GTCR Strategic Growth Fund I/B LP and GTCR Strategic Growth Fund I/C LP (collectively, “SGF”), in each case (except where otherwise noted), together with any parallel funds and alternative investment funds. Excludes GTCR Capital Partners, LP, a mezzanine debt fund formed by affiliates of GTCR in 1999 and terminated in 2011. Market conditions, investment strategies and GTCR personnel have changed over the 40-year time period during which the various GTCR Funds have made investments. Past performance is not a guarantee of future results.

# Definitions and Calculations

**Investments:** The aggregate amount of capital invested by the applicable Fund(s).

**Hypothetical Performance:** Any hypothetical performance has been provided for illustrative purposes only, and is not necessarily, and does not purport to be, indicative, or a guarantee, of future results. Hypothetical Performance includes Unrealized Value or other similar information, and represents performance results that no individual GTCR Fund or investor has actually achieved. The preparation of such information is based on underlying assumptions, and because it does not represent the actual performance of any GTCR Fund or investor, it is subject to various risks and limitations that are not applicable to non-Hypothetical Performance presentations. For example, because Hypothetical Performance may reflect different funds managed through various economic cycles, it is not, nor intended, to be representative of, the anticipated performance achieved by of an investor in a single GTCR Fund. Any preparation of Hypothetical Performances involves subjective judgments. Although GTCR believes any hypothetical performance calculations described herein are based on reasonable assumptions, the use of different assumptions would produce different results. For the foregoing and other similar reasons, the comparability of Hypothetical Performance to the prior (or future) actual performance of a GTCR Fund is limited, and prospective investors should not unduly rely on any such information in making an investment decision.

**Management Start-Up:** Start-up company formed and funded by GTCR or a Fund through which GTCR partners with a management team for the purpose of making acquisitions. The start-up capital funded by GTCR or a Fund typically will be used for the management team's overhead expenses for a period of time, including the management team's compensation and traditional due diligence expenses incurred pursuing acquisition opportunities. In certain cases, a Fund may invest start-up capital in a Management Start-Up, but the Management Start-Up will not have completed a Platform Acquisition towards the end of the investment period and/or capacity of such Fund. In other cases, GTCR may invest start-up capital in a Management Start-Up when an existing Fund is not expected to have investment capacity to consummate a Platform Acquisition and a subsequent Fund has not been formed or commenced investment activities. In either case, the Fund or GTCR, as applicable, may sell its interest in such Management Start-Up to a subsequent Fund, and the Fund or GTCR, as applicable, will seek reimbursement for any start-up capital invested in the Management Start-Up from the subsequent Fund. Any such sale is consummated after obtaining Advisory Board approval from the applicable Fund(s).

**Multiple Expansion:** With respect to each investment, GTCR's calculation of the difference between the Valuation Multiple with respect to all acquisitions, and the Valuation Multiple at exit. Multiple Expansion is based on multiples determined by GTCR and calculated by GTCR after making adjustments it deems necessary or appropriate. Multiple Expansion is not audited and is presented solely to demonstrate GTCR's estimate of the impact of Multiple Expansion on the overall gain or loss of Realized Investments. With respect to Protection1 (Fund IX) and GreatCall (Fund XI), GTCR used Steady State Net Operating Cash Flow instead of EBITDA in its calculation of equity value creation above. With respect to Opus Global (Fund X), GTCR used Annual Contract Value instead of EBITDA in its calculation of equity value creation above. Additional information with respect to GTCR's calculation of Multiple Expansion is available upon request.

**Net Debt:** Gross debt less excess cash. Net Debt includes accrued interest, where applicable.

**Net Distributions to Paid in Capital ("Net DPI"):** The quotient of (i) limited partner distributions (after accounting for applicable expenses, fees and carried interest), divided by (ii) limited partner contributions. An individual limited partner's Net DPI may vary based on the timing of capital contributions and distributions. Net DPI excludes the general partner's commitment to the Fund and its associated returns, which are not subject to management fees or carried interest.

**Net IRR:** Compounded annual internal rate of return based on limited partner capital contributions, limited partner distributions and Unrealized Value after deduction of Fund-level management fees and expenses, income earned on cash and cash equivalents and any carried interest to the Funds' respective general partners, as well as expenses directly related to investments (as determined by such general partners). An individual limited partner's Net IRR may vary based on the timing of capital contributions and distributions. Net IRR is calculated on a quarterly basis based on the actual quarter during which each limited partner capital contribution and limited partners distribution occurred and on the Unrealized Value at the end of each applicable quarter. Net IRR may include Unrealized Values and, accordingly, no limited partner in such Funds has actually received such returns. Net IRR excludes the general partner's commitment to the Fund and its associated returns, which are not subject to management fees or carried interest. The use of bridge financing in accordance with the terms of the governing documents of the applicable Fund may increase the Net IRR of such Fund. The Funds may use a revolving line of credit to fund interim limited partner capital contributions in accordance with the governing documents of such Fund. The interest expense and other costs of any such borrowings will be borne by the relevant Fund in accordance with the governing documents of such Fund and, accordingly, may decrease the Net IRR of such Fund. Further, the use of leverage may increase such Fund's Net IRR metrics due to the shorter period during which capital contributions are outstanding. For purposes of calculating Net IRR, GTCR uses the dates on which Fund capital calls are due from its limited partners, not the date on which a Fund draws on the revolving line of credit to make an investment in the applicable portfolio company (and the time periods between such capital calls and investment dates will vary in accordance with the governing documents of the applicable GTCR Fund). Because it would require an arbitrary allocation of fees and expenses, Net IRR for individual investments cannot be calculated.

# Definitions and Calculations

**Net MOIC:** The quotient of (i) limited partner distributions (after deduction of Fund-level management fees and expenses, income earned on cash and cash equivalents and any carried interest to the Funds' respective general partners, as well as expenses directly related to investments (as determined by such general partners)) plus limited partner capital account balances as of the applicable date, divided by (ii) limited partner contributions. An individual limited partner's Net MOIC may vary based on the timing of capital contributions and distributions. Moreover, Net MOIC may include Unrealized Values and, accordingly, no limited partner in such Funds has actually received such returns. Net MOIC excludes the general partner's commitment to the Fund and its associated returns, which are not subject to management fees or carried interest. The use of bridge financing and/or "recycling" of capital, each in accordance with the terms of the governing documents of the applicable Fund, may increase the Net MOIC of such Fund. The Funds may use a revolving line of credit to fund interim limited partner capital contributions in accordance with the governing documents of such Fund. The interest expense and other costs of any borrowings on the revolving line of credit of a Fund in accordance with the terms of the governing documents of the applicable Fund will be borne by the relevant Fund and, accordingly, may decrease the Net MOIC of such Fund. Because it would require an arbitrary allocation of fees and expenses, Net MOIC for individual investments cannot be calculated. Where Net MOIC is presented for a Subset, Net MOIC is calculated as Gross MOIC multiplied by the historic percentage difference between Gross MOIC and Net MOIC across all GTCR Funds to date. While GTCR believes these assumptions are reasonable to calculate a hypothetical Subset Net MOIC, precise net multiples for Subsets such as Subset Net MOIC cannot be calculated because of the arbitrary allocation of fees, expenses, and carried interest to each investment at the fund level. Subset Net MOIC is Hypothetical Performance subject to the risks and limitations described therein.

**Net Realized IRR:** Net IRR, adjusted by the current percentage difference between Gross IRR and Gross Realized IRR on a weighted average basis across the applicable GTCR Fund(s). While GTCR believes these assumptions are reasonable to calculate a hypothetical Net Realized IRR, precise net returns for Subsets such as Net Realized IRR cannot be calculated because of the arbitrary allocation of fees, expenses, and carried interest to each investment at the fund level. Further, there is no guarantee such assumptions will accurately reflect the ultimate allocation of expenses and other costs across Realized Investments, as the ultimate allocation of expenses across currently unrealized investments will depend, among other things, on future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale. The actual Net Realized IRR by any investor may differ materially from the Net Realized IRR stated herein. The estimated net performance numbers do not necessarily replicate the performance experienced by a hypothetical investor that had exposure to each investment in the Subset.

**Net Realized MOIC:** Net MOIC, adjusted by the current percentage difference between Gross MOIC and Gross Realized MOIC on a weighted average basis across the applicable GTCR Fund(s). While GTCR believes these assumptions are reasonable to calculate a hypothetical Net Realized MOIC, precise net multiples for Subsets such as Net Realized MOIC cannot be calculated because of the arbitrary allocation of fees, expenses, and carried interest to each investment at the fund level. Further, there is no guarantee such assumptions will accurately reflect the ultimate allocation of expenses and other costs across Realized Investments, as the ultimate allocation of expenses across currently unrealized investments will depend, among other things, on future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale. The actual Net Realized MOIC by any investor may differ materially from the Net Realized MOIC stated herein. The estimated net performance numbers do not necessarily replicate the performance experienced by a hypothetical investor that had exposure to each investment in the Subset.

**Realized Investments:** Investments that have been sold, either through a substantial partial sale or full sale, written off in accordance with Section 165(g) of the Code or companies that have been written-off or written-down to a value of \$1. Excludes Discontinued Management Start-Ups, Management Start-Ups that have not completed a Platform Acquisition and publicly-traded investments with respect to which the applicable Funds have sold less than 50% of such Funds' Initial Ownership. For purposes of page 19, with respect to investments that have been partially sold, GTCR calculated Debt Paydown, Multiple Expansion and EBITDA Growth based on the percentage of the applicable Fund's ownership interest that has been sold applied to the Realized Value with respect to such investment. Realized Investments are calculated at the Fund level, before deduction of Fund level management fees, expenses or any carried interest to the Funds' respective general partners, all of which in the aggregate may be substantial.

**Realized Value:** The total amount received by the applicable Fund(s), which may include advisory fees, transaction fees and tax distributions. Realized Value is calculated at the Fund level, before deduction of Fund-level management fees and expenses and any carried interest to the Funds' respective general partners, all of which, in the aggregate, may be substantial. The actual return realized by any investor in the applicable Fund may differ materially from the Realized Value stated herein.

# Definitions and Calculations

**SGF Performance Data:** Net IRR, Net DPI and Net MOIC with respect to SGF represents the performance of GTCR Strategic Growth Fund I/A LP and GTCR Strategic Growth Fund I/B LP only. GTCR Strategic Growth Fund I/C LP (“SGF I/C”) is a parallel fund established for non-U.S. and U.S. tax exempt investors which utilize blocker corporations to reduce the likelihood of such investors being required to recognize income “effectively connected with the conduct of a trade or business within the United States” as defined in Section 864 of the Code. SGF I/C represents approximately 23.1% of total commitments to SGF. In accordance with the governing documents of SGF, GTCR may provide a capital call notice to investors up to 270 days (as opposed to up to 90 days for Funds X and XI, and on or around the applicable investment date for Funds I-IX) after an investment by SGF has been made. As a result SGF performance metrics (Net IRR, Net DPI and Net MOIC) represent leveraged return data. The net performance metrics presented herein may have been higher or lower if such leverage were not utilized. The track record of SGF includes investments that are only a subset of the target size investments of the other GTCR Funds. Therefore, the performance of the Strategic Growth Fund is not directly comparable.

**Steady State Net Operating Cash Flow (SSNOCF):** Steady State Net Operating Cash Flow calculated on a monthly basis based on information provided by the applicable portfolio company management team, and is presented inclusive of all acquisitions and exclusive of all divestitures. SSNOCF is a non-GAAP accounting metric and is not audited. Additional information with respect to the calculation of SSNOCF is available upon request.

**Subset:** A subset of multiple Funds or a subset of portfolio companies held by a single Fund or multiple Funds.

**S&P 500 Data:** The Standard & Poors (“S&P”) 500 Index is a stock market index comprised of the 500 largest U.S. publicly traded companies. All components of the S&P 500 are further assigned to one of the eleven “Select Sector Indices”, which seek to track major economic segments and are highly liquid benchmarks (collectively, the “S&P 500 Indices”). Information about the S&P 500 Indices has been obtained from sources believed to be reliable. The S&P 500 Indices are presented for reference purposes only and an investment in a private investment fund such as the Funds is unlike an investment in an index of securities. The Funds will not invest in all (or any) of the instruments represented the S&P 500 Indices, and the Funds may also make investments in certain types of instruments not represented in the S&P 500 Indices. In addition, the criteria for including particular instruments in any given S&P 500 Index is different from GTCR’s criteria for choosing investments for its Funds. The S&P 500 Indices are generally not representative of the investments made by any Fund, and the performance of a Fund generally is not comparable to the performance of these Indices. For the foregoing and other reasons, the results of any Fund and the S&P 500 Indices are not directly comparable.

**Unrealized Value:** With respect to the applicable Fund and/or portfolio company, the estimated fair market value of the applicable investment(s) as of the relevant date, as estimated by GTCR. Such estimates are made by GTCR using assumptions that GTCR believes are reasonable under the circumstances, relating to each particular investment. There can be no assurance that unrealized investments will be realized at the valuations indicated herein, and used to calculate the IRRs, MOICs and DPIs contained herein, and transaction costs connected with such realizations remain unknown and, therefore, are not factored into such calculations. Estimates of unrealized value are subject to numerous variables that change over time (e.g., future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs, the timing and manner at sale, etc.) and, therefore, amounts actually realized in the future (if any) will vary (in some cases materially) from the estimated gross “unrealized values” used in connections with calculations referenced herein.

**Valuation EBITDA:** Adj EBITDA used in GTCR’s valuation for the applicable period, unless otherwise noted.

**Valuation Multiple:** With respect to each investment, the quotient of (i) Enterprise Value, divided by (ii) Valuation EBITDA.

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Private Equity Annual Tactical Plan  
Resolution 2022-16  
DATE: December 1-2, 2022

ACTION: X  
INFORMATION: \_\_\_\_\_

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## BACKGROUND:

The Alaska Retirement Management Board's (ARMB) "Private Equity Partnerships Portfolio Policies and Procedures" calls for the preparation and adoption of an "Annual Tactical Plan" (Plan).

## STATUS:

Staff presented the Plan to the ARMB at the December 2022 board meeting.

The Plan reviewed the status of the portfolio, historical and prospective market conditions, and the annual investment strategy designed to further the ARMB's goals and objectives for the private equity program.

Staff is recommending the Board approve the Plan which includes forward commitment targets starting at \$700 million in 2023 and increasing over time to maintain the ARMB's long-term private equity allocation of 14%. The commitments will be allocated equally between Abbott, Pathway, and direct investments.

## RECOMMENDATION:

The Alaska Retirement Management Board adopt Resolution 2022-16 approving the 2022 Private Equity Annual Tactical Plan.

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State of Alaska  
ALASKA RETIREMENT MANAGEMENT BOARD

Relating to Private Equity Annual Tactical Plan  
Resolution 2022-16

WHEREAS, the Alaska Retirement Management Board (Board) was established by law to serve as trustee to the assets of the State's retirement systems; and

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

WHEREAS, AS 37.10.071 and AS 37.10.210-220 require the Board to apply the prudent investor rule and exercise the fiduciary duty in the sole financial best interest of the funds entrusted to it and treat beneficiaries thereof with impartiality; and

WHEREAS, the Board contracts an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investment in private equity assets for the State of Alaska Retirement and Benefits Plans; and

WHEREAS, the Board will establish, and on an annual basis review, an investment plan for private equity;

NOW THEREFORE, BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopts the 2022 Private Equity Annual Tactical Plan.

DATED at Anchorage, Alaska this \_\_\_\_\_ day of December 2022.

\_\_\_\_\_  
Chair

ATTEST:

\_\_\_\_\_  
Secretary

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Change in Key Person for General  
Consultant Contract 19-006

ACTION:   X  

DATE: December 2, 2022

INFORMATION: \_\_\_\_\_

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## BACKGROUND

The Alaska Retirement Management Board contracts with Callan LLC for performance measurement and investment advisory consultation.

Section Six of the contract (19-006) states:

**Section Six: Key Person.** Paul Erlendson, is considered as a designated “Key Person” to perform the Contractor’s obligations under this agreement. As such, entry into this agreement and continuation of it is premised upon continued employment of Paul Erlendson by Contractor.

Paul Erlendson shall be the primary contact and is considered project manager for Contractor under this agreement and shall perform or be directly responsible for and specifically knowledgeable about all work performed by Contractor under this agreement. Paul Erlendson shall attend board meetings required by this agreement unless a non-business emergency prevents his attendance.

Additionally, Section Seven states:

**Section Seven: Amendments.** This agreement may not be amended or modified except by an instrument in writing signed by both Contractor and ARMB.

## STATUS

At the June 2022 meeting, Paul Erlendson announced his intent to retire in December 2022. Callan shared their succession plan which included Senior Vice President Steven Center remaining on the account and introduced Ivan “Butch” Cliff to the Board.

## RECOMMENDATION

The Alaska Retirement Management Board direct staff to amend Section Six of Contract #19-006 to designate Steve Center as the “Key Person”.

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# Investment Menu Review Analysis

## WRS Plan 01 – State Employees



## WRS Plan 02 – Non-State Employees

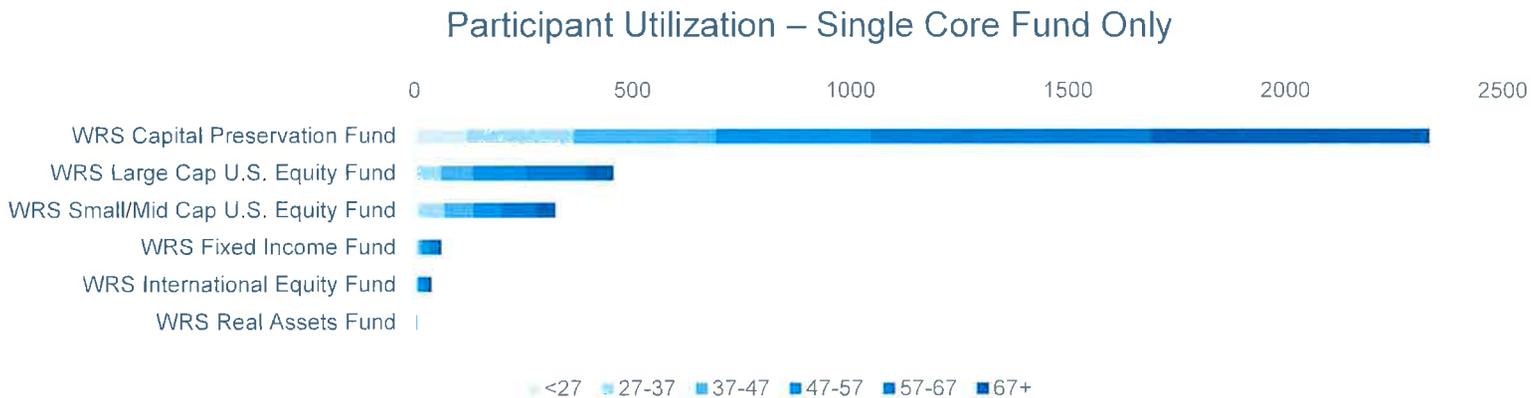


Participant balances are as of 04/09/2020 and were sourced from Empower.  
Allocations shown may not sum up to 100% exactly due to rounding.

# Investment Menu Review Analysis – Core Only

## WRS Combined Plans: Participants with a single investment

- **14%** of those participants with a single fund have invested in the US Large Cap Equity fund.
- **51%** of participants invested in core funds only, chose only one fund.
- **73%** of participants with a single investment are invested in the Capital Preservation fund.

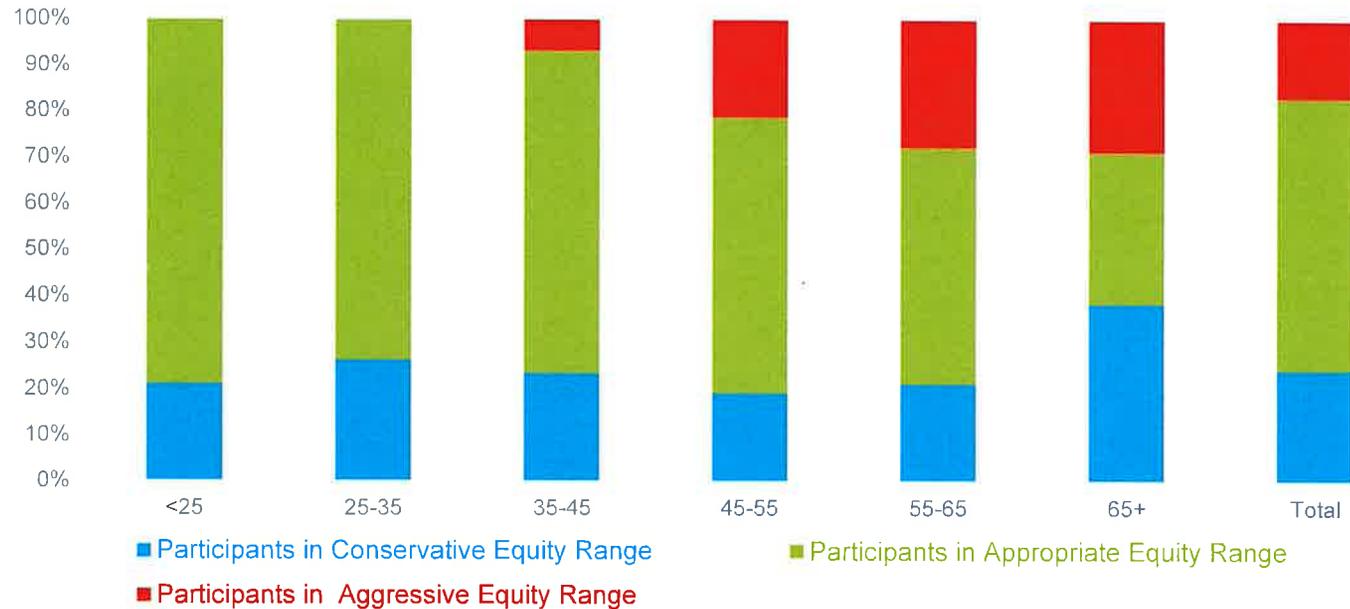


Participant balances are as of 04/09/2020 and were sourced from Empower. Allocations shown may not sum up to 100% exactly due to rounding.

# 2018 Participant Diversification – Combined Plans

In 2018 approximately 59% of Participants had appropriate equity exposure

**Participant Allocations**  
**59% - Appropriate Equity**  
**17% - Aggressive Equity**  
**24% - Conservative Equity**



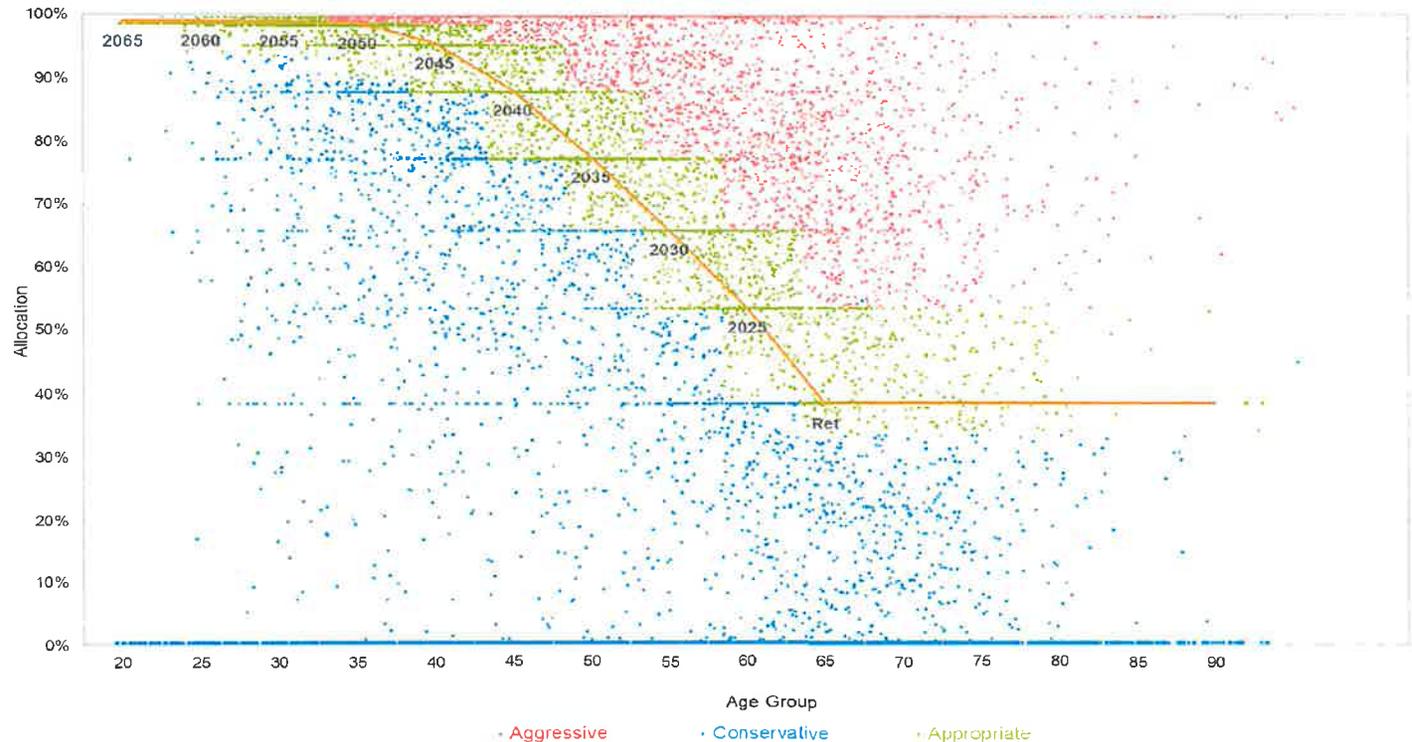
	<25	25-35	35-45	45-55	55-65	65+	Total
Total Participants in Age Group	498	3,414	4,481	4,783	5,640	2,770	21,586
Participants in Aggressive Equity Range	0%	0%	7%	21%	28%	29%	17%
Participants in Appropriate Equity Range	79%	74%	70%	59%	51%	33%	59%
Participants in Conservative Equity Range	21%	26%	24%	19%	21%	38%	24%
Participants 100% in Equities	2%	6%	9%	12%	12%	10%	10%
Participants 0% in Equities	6%	6%	6%	7%	13%	28%	11%

Source: Empower as of December 31, 2017. Median allocations may not sum to 100%. An aggressive/conservative allocation represents allocations that correspond to Target Date vintages more than 5 years greater than or less than the participants' current ages.

# 2020 Investment Menu Review Analysis – Total Plan

In 2020 approximately 64% of Participants have appropriate equity exposure

**Participant Allocations**  
**64% - Appropriate Equity**  
**17% - Aggressive Equity**  
**19% - Conservative Equity**



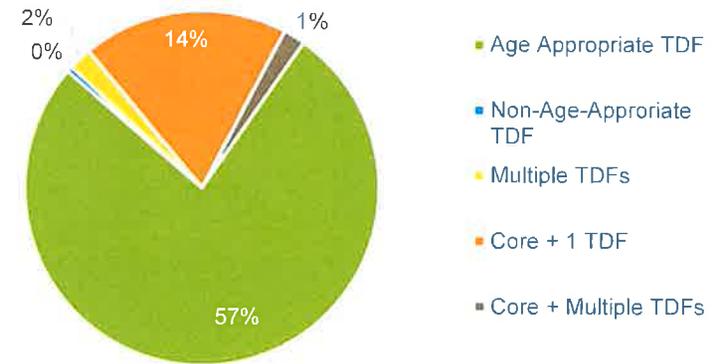
	Age Group						Total
	<27	27-37	37-47	47-57	57-67	67+	
Total Participants in Age Group	1,242	4,707	5,433	5,517	5,605	2,436	24,940
Participants in Aggressive Equity Range	0.0%	5.8%	11.0%	21.0%	26.9%	26.8%	17%
Participants in Appropriate Equity Range	84.6%	78.1%	71.8%	63.8%	53.0%	35%	64%
Participants in Conservative Equity Range	15.4%	16.1%	17.2%	15.2%	20.1%	38.4%	19%
Participants 100% in Equities	2%	6%	7%	10%	10%	9%	8%
Participants 0% in Equities	10%	5%	6%	7%	13%	27%	10%

Source: Empower as of 04/09/2020. Median allocations may not sum to 100%. TDF Glide Path Allocations are based on BlackRock target allocations. An aggressive/conservative allocation represents allocations that correspond to Target Date vintages more than 5 years greater than or less than the participants' current ages.

# 2020 Target Date Fund Utilization

- At the total Plan level nearly 57% of participants are invested in the appropriate target date fund.
- Approximately 14% that are invested in a target date fund are also invested in a core white label fund.
- Since 2018, the number of participants with a single target date fund investment has increased.

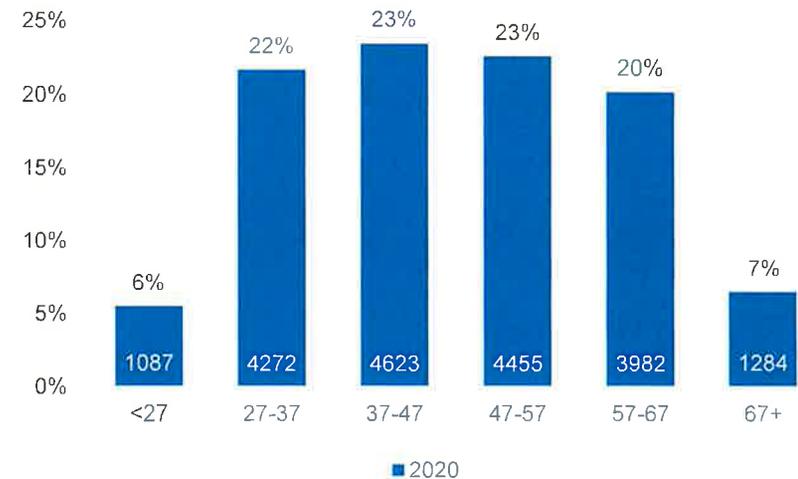
Target-Date Fund Utilization



Participant Investment Selections (% of Participants)



TDF Utilization by Age



# PUBLIC COMMENT

## **Thursday, December 1, 2022**

1. Elaine Schroeder, 350 Juneau (oral)
2. Richard Farnell, 350 Juneau (oral)
3. John Hudson, 350 Juneau (oral)
4. Jim Simard, 350 Juneau (oral & written copy)
5. Tom Klaameyer, NEA Alaska (oral)

## **Friday, December 2, 2022**

No requests for comment.